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# Climates of the United States

IN COLORS.

POPULAR EDITION OF DENISON'S CHARTS.



## From Commendatory Notices.

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# CLIMATES OF THE UNITED STATES

## IN COLORS.

POPULAR EDITION OF DENISON'S CHARTS, WITH ADDITIONS.

BY

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AUTHOR OF

"THE ROCKY MOUNTAIN HEALTH RESORTS," "TUBERCULIN AND THE LIVING CELL,"  
"EXERCISE FOR PULMONARY INVALIDS," ETC.

DESIGNED FOR USE OF PHYSICIANS, TOURISTS, HEALTH SEEKERS, FARMERS, AND SCHOOLS; BEING A REVISED EDITION IN CONDENSED FORM OF "DENISON'S ANNUAL AND SEASONAL CLIMATIC CHARTS OF THE UNITED STATES," WITH SIGNAL SERVICE TABLES, COMPRISING EIGHT MILLION SEPARATE OBSERVATIONS, USED IN THESE GRAPHIC ILLUSTRATIONS, TOGETHER WITH ADDITIONS, *i. e.*, THE CHART OF ELEVATIONS IN THE HYSOMETRIC ILLUSTRATION AND THE ELEVEN-YEAR AVERAGE OF CLOUDINESS PERCENTAGES; WITH DESCRIPTIONS OF ANNUAL AND SEASONAL WEATHER DATA [THE SEASONAL DIVISION BEING A NEW AND SPECIAL FEATURE OF THIS SERIES, AND THE PREFERABLE ONE FOR THE PROPER STUDY OF CLIMATE]. ALSO THE PREDICTIONS OF WEATHER FROM PREVAILING OR GIVEN WIND DIRECTIONS, AND THE HUMIDITY STATISTICS OF AIR MOISTURE OR DRYNESS FOR EACH SEASON OF THE YEAR, IN EIGHT EVEN DEGREES OF COLOR, MAKING A TOTAL OF TWELVE CHARTS AND ELEVEN TABLES, PRESENTED AS A CONDENSED AND HANDY SUBSTITUTE FOR ELEVEN BULKY VOLUMES OF U. S. SIGNAL SERVICE BUREAU'S ANNUAL REPORTS.

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## INTRODUCTION.

If it be true, as announced by Montesquieu, that "the empire of climate is the most powerful of all empires," then the utility of introducing the statistics of climate into an atlas of this character is sufficiently apparent. The subject of climate is so complex, comprising as it does, in a broad sense, everything which constitutes what we term the *weather*, that it has heretofore been impossible to comprehend all its phases, for any extended section of country, without necessitating a voluminous array of unwieldy statistics. It has long been the hope of the author to overcome this difficulty by condensing the statistics for the whole country, and by graphically illustrating them in a manner to be appreciated at a glance. It

has also been the author's aim to so present all important climatic data that any fair question about the climatic statistics of different sections of the United States could be quickly and easily answered by reference to such illustrated records. If the satisfaction of the reader is at all in proportion to the pleasure the author has experienced in the accomplishment of this difficult task, then the charts and tables here presented can not fail of a successful mission in schools, academies, homes, and in the offices of professional men, especially of physicians, for whom the work was commenced.

## DESCRIPTION OF ANNUAL CHARTS, WITH STATISTICAL TABLES.

## TABLE SHOWING THE AVERAGE CLOUDINESS—(Scale of 0 to 100\*)—AT CERTAIN STATIONS OF THE SIGNAL SERVICE, U. S. ARMY, FOR EACH SEASON AND THE YEAR.

Computed from the commencement of observations at each to December, 1885, except at Stations closed prior to that date.

The seasons comprise the following months: Spring—March, April and May; Summer—June, July and August; Autumn—September, October and November; Winter—December, January and February.

\* In this table the usual Signal Service method of calculation by tenths is changed to hundredths.

DISTRICTS AND STATIONS.				STATIONS ESTABLISHED.				DISTRICTS AND STATIONS.				STATIONS ESTABLISHED.				DISTRICTS AND STATIONS.				STATIONS ESTABLISHED.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
New England.				Middle Atlantic States.				Rio Grande Valley.				Upper Mississippi Valley.				Missouri Valley.				Extreme Northwest.				Northern Slope.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Eastport	Portland	Mount Washington	Boston	Block Island	New Haven	New London	Albany	New York	Philadelphia	Atlantic City	Barnegat City	Cape May (2)	Sandy Hook	Delaware Breakwater (5)	Baltimore	Washington	Cape Henry	Chincoteague	Lynchburg	Norfolk	Charlotte	Hatteras	Kitty Hawk	Macon, Fort	Smithville	Wilmington	Charleston	Spring.	Summer.	Autumn.	Winter.	Annual.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Me.	Me.	N. H.	Mass.	R. I.	Conn.	Conn.	N. Y.	N. Y.	Pa.	N. J.	N. J.	N. J.	N. J.	Del.	Md.	D. C.	Va.	Va.	Va.	Va.	N. C.	N. C.	N. C.	N. C.	N. C.	N. C.	N. C.	Apr. 1, '73	Jan. 15, '71	Dec. 1, '70	Nov. 1, '70	Sept. 1, '70	Aug. 25, '75	May 28, '75	Nov. 1, '70	Oct. 15, '72	Sept. 24, '71	Aug. 1, '78	July 10, '73	June 16, '71	May 1, '71	April 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 15, '74	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	Nov. 25, '71	Dec. 5, '78	Oct. 15, '79	May 21, '71	Nov. 1, '70	Dec. 22, '79	July 1, '81	Apr. 1, '73	Jan. 1, '81	Sept. 5, '80	Oct. 23, '78	Oct. 6, '79	



Augusta.....Ga.	Nov. 2, '70	.44	.47	.44	.49	.46	Maginnis, Fort.....Mont.	July 14, '82	.53	.41	.48	.51
Savannah.....Ga.	Jan. 1, '71	.43	.49	.45	.48	.46	Shaw, Fort.....Mont.	Dec. 1, '80	.43	.36	.43	.43
Jacksonville.....Fla.	Sept. 11, '71	.40	.44	.45	.47	.44	Deadwood.....Dak.	April 18, '77	.38	.37	.38	.45
<b>Florida Peninsula.</b>							Cheyenne.....Wyo.	Nov. 1, '70	.48	.38	.35	.39
Cedar Keys.....Fla.	Nov. 7, '79	.37	.48	.36	.40	.40	North Platte.....Neb.	Sept. 18, '74	.52	.42	.40	.43
Key West.....Fla.	Nov. 1, '70	.34	.49	.46	.39	.43	<b>Middle Slope.</b>					
<b>Eastern Gulf States.</b>							Denver.....Col.	Nov. 19, '71	.46	.40	.33	.38
Atlanta.....Ga.	Sept. 25, '78	.48	.50	.45	.55	.50	Pike's Peak.....Col.	Nov. 1, '73	.47	.44	.35	.39
Pensacola.....Fla.	Oct. 27, '79	.45	.47	.48	.52	.47	West Las Animas.....Col.	Nov. 1, '81	.45	.41	.31	.37
Mobile.....Ala.	Nov. 7, '70	.46	.48	.43	.51	.47	Dodge City.....Kan.	Sept. 15, '74	.43	.37	.33	.40
Montgomery.....Ala.	Nov. 9, '70	.46	.49	.45	.57	.49	Elliott, Fort.....Tex.	Nov. 29, '79	.38	.36	.32	.33
Vicksburg.....Miss.	Sept. 10, '71	.46	.41	.40	.55	.46	<b>Southern Slope.</b>					
New Orleans.....La.	Nov. 1, '70	.48	.47	.45	.52	.48	Sill, Fort.....Ind. T.	June 23, '75	.41	.35	.37	.46
<b>Western Gulf States.</b>							Concho, Fort (3).....Texas	Oct. 10, '75	.38	.36	.32	.40
Shreveport.....La.	Sept. 3, '71	.50	.41	.41	.56	.47	Davis, Fort.....Texas	Dec. 24, '77	.30	.34	.33	.32
Fort Smith.....Ark.	June 1, '82	.50	.42	.42	.52	.47	Stockton, Fort.....Texas	Feb. 26, '76	.31	.30	.28	.33
Little Rock.....Ark.	July 1, '79	.48	.37	.41	.54	.45	<b>Southern Plateau.</b>					
Galveston.....Texas	April 19, '71	.50	.41	.41	.54	.46	Santa Fé.....N. Mex.	Nov. 20, '71	.40	.45	.29	.35
Indianola.....Texas	May 1, '72	.52	.38	.41	.55	.46	El Paso.....Texas	Nov. 5, '77	.28	.35	.30	.31
Palestine.....Texas	Dec. 3, '81	.53	.40	.42	.54	.48	Apache, Fort.....Ariz.	Oct. 9, '77	.28	.39	.22	.34
<b>Ohio Valley and Tennessee.</b>							Grant, Fort.....Ariz.	Nov. 1, '75	.26	.39	.19	.33
Chattanooga.....Tenn.	Jan. 8, '79	.49	.45	.47	.59	.50	Prescott.....Ariz.	Nov. 19, '73	.27	.27	.17	.24
Knoxville.....Tenn.	Jan. 1, '71	.49	.47	.48	.58	.50	Thomas, Fort.....Ariz.	Sept. 22, '77	.25	.34	.24	.33
Memphis.....Tenn.	Feb. 28, '71	.49	.42	.44	.58	.48	Yuma.....Ariz.	Nov. 18, '73	.17	.16	.14	.23
Nashville.....Tenn.	Nov. 1, '70	.54	.48	.47	.63	.54	<b>Middle Plateau.</b>					
Louisville.....Ky.	Sept. 11, '71	.54	.46	.47	.61	.52	Winnemucca.....Nev.	July 1, '77	.42	.21	.27	.45
Indianapolis.....Ind.	Feb. 10, '71	.55	.47	.48	.61	.53	Salt Lake City.....Utah	March 19, '74	.50	.31	.37	.54
Cincinnati.....Ohio	Nov. 1, '70	.56	.46	.48	.62	.52	<b>Northern Plateau.</b>					
Columbus.....Ohio	July 1, '78	.55	.46	.50	.68	.55	Boise City.....Idaho	July 1, '77	.48	.29	.44	.60
Pittsburg.....Pa.	Nov. 1, '70	.57	.47	.57	.69	.58	Lawston (4).....Idaho	July 1, '79	.44	.31	.44	.64
<b>Lower Lakes.</b>							Dayton (1).....Wash.	July 1, '79	.46	.31	.46	.64
Buffalo.....N. Y.	Nov. 1, '70	.57	.47	.62	.75	.60	Spokane Falls.....Wash.	Feb. 5, '81	.45	.36	.51	.56
Oswego.....N. Y.	Nov. 1, '70	.59	.48	.66	.80	.63	Eagle Rock (6).....Idaho	Dec. 3, '80	.38	.24	.36	.37
Rochester.....N. Y.	Nov. 1, '70	.58	.46	.63	.74	.61	<b>North Pacific Coast.</b>					
Erie.....Pa.	May 25, '73	.55	.44	.59	.71	.57	Olympia.....Wash.	July 1, '77	.62	.49	.64	.76
Cleveland.....Ohio	Nov. 1, '70	.55	.44	.59	.71	.57	Portland.....Ore.	Nov. 1, '71	.65	.45	.56	.72
Sandusky.....Ohio	Aug. 2, '77	.55	.43	.55	.65	.55	Roseburg.....Ore.	July 15, '77	.54	.34	.49	.68
Toledo.....Ohio	Nov. 1, '70	.53	.46	.55	.68	.57	<b>Middle Pacific Coast.</b>					
Detroit.....Mich.	Nov. 1, '70	.55	.44	.53	.66	.55	Cape Mendocino.....Cal.	July 27, '82	.48	.26	.37	.47
<b>Upper Lakes.</b>							Red Bluff.....Cal.	July 1, '77	.32	.11	.21	.44
Alpena.....Mich.	Sept. 10, '72	.51	.43	.62	.70	.57	Sacramento.....Cal.	July 1, '77	.38	.08	.19	.38
Escanaba.....Mich.	May 24, '71	.53	.47	.63	.75	.57	San Francisco.....Cal.	March 8, '71	.42	.44	.35	.46
Grand Haven.....Mich.	May 20, '71	.52	.40	.57	.75	.56	<b>South Pacific Coast.</b>					
Mackinaw City.....Mich.	May 20, '82	.52	.47	.64	.73	.59	Los Angeles.....Cal.	July 1, '77	.45	.33	.24	.34
Marquette.....Mich.	May 1, '71	.51	.45	.65	.67	.57	San Diego.....Cal.	Nov. 1, '71	.49	.45	.36	.40
Port Huron.....Mich.	July 25, '74	.56	.47	.59	.71	.58	Visalia (6).....Cal.	July 1, '77	.34	.07	.15	.25
Chicago.....Ill.	Nov. 1, '70	.52	.43	.51	.57	.51	Provincetown (7).....Mass.	Feb. 15, '82	.54	.40	.54	.63
Milwaukee.....Wis.	Nov. 1, '70	.56	.47	.56	.60	.55	La Messilla (8).....N. Mex.	June 16, '76	.21	.33	.20	.28
Duluth.....Minn.	Nov. 1, '70	.51	.50	.59	.54	.54	Pioche (6).....Nev.	July 29, '77	.38	.26	.22	.36

about the climate of different sections, for it is an estimate of the humidity of the atmosphere which is but slightly affected by local peculiarities and the unequal radiation from the earth's surface. Particularly is cloudiness little affected by those faults of temperature statistics in cities, which are due to the greater heat there, and radiation from stone buildings, paved streets, etc. Besides, it is the most accurate estimate yet obtained for an average of shades on the acc of the cloudiness to range the exact per cent note a somewhat (see second chart)

5. Station closed March 1, '85.  
6. " " June 15, '83.  
7. Station closed April 1, '84.  
8. " " Aug. 6, '82.

3. Station closed Sept. 15, '85.  
4. " " Dec. 31, '85.

1. Station closed Nov. 30, '85.  
2. " " Oct. 31, '85.

REFERENCES: {



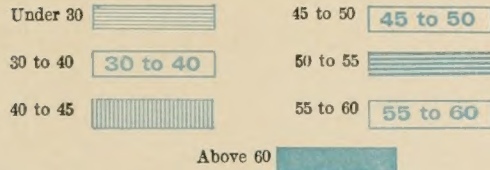
# THE ANNUAL CLOUDINESS CHART.

AVERAGE, NEARLY 11 YEARS.





## PERCENTAGE OF TIME THE SKY IS CLOUDY.





## DESCRIPTION OF ANNUAL CHARTS, WITH STATISTICAL TABLES.

**TEMPERATURE.**—The average annual temperature of belts of country, stretching across the United States, are represented by the *solid blue lines*. These *isothermal lines* are described by the figures (Fahrenheit scale) given at their termini on either coast. They are computed, according to the plan of the Signal Service, by dividing the sum of the 7 A. M., 3 P. M. and 11 P. M. observations by three to get each daily record. These isothermals represent the average of annual means for all time since the Signal Stations were established (for dates of establishment see annual cloudiness table). The temperatures of places between isothermal lines can be approximately determined according to their nearness to the same.

**RANGES OF TEMPERATURE.**—Those who make a great point, as many do, of the precise variations of temperature, will be interested in the means of maximum and minimum and monthly ranges of temperature, given in these tables. The means of the maximum and minimum temperatures for 1883 are the averages of the daily highest and daily lowest temperatures for all the stations. From these two the mean daily range of temperature is computed, which is also given. The average or annual mean of monthly ranges of temperature is the average difference between the highest and lowest records in each month, and, with the daily range, indicates the equality or variability of a given climate. Many physicians, who had hitherto recommended equable climates for the classes of consumptives which can be benefited, have lately learned that *variability* is often to be preferred, as this quality pertains particularly to stimulating, dry, cool, and elevated climates, while *equability* always accompanies enervating warmth, coupled with injurious dampness of atmosphere.

**RAINFALL.**—The amount of rain and melted snow is accurately measured at each Signal Station (see Mean Precipitation in accompanying table), and the average yearly totals are graphically illustrated by the *interrupted blue lines* running over the face of this map. The inches of rainfall are given at the termini of each of these lines on the border of the map. The variations in rainfall, within the boundaries of the United States, are remarkable, being from less than five up to over seventy inches. Excluding the Mt. Washington station (eighty-three inches), the greatest average precipitation during a period of nearly eleven years, in the United States, is seen to be on the northeastern coast of North Carolina, where the record is seventy-five inches per year. The least average is below five inches per year, and is to be found in portions of California, Nevada and Arizona, bordering on the river Colorado. This extremely dry region is represented by the signal station at Yuma. The uniform annual fall of rain and melted snow, throughout the central portion of the United States, is illustrated by the interrupted lines representing the 20, 25, and 30 inch precipitation, which extend away through the country from north to south. The most rapid increase of annual rainfall is seen in the extreme north-west, where a narrow belt of country shows an increase from 20 to 60 inches per year. This is to be mainly accounted for by the condensation of moisture, which occurs when the humid Pacific ocean winds meet the low winter temperature of Washington Territory.

TABLE OF AVERAGE TEMPERATURES AND RAINFALL.

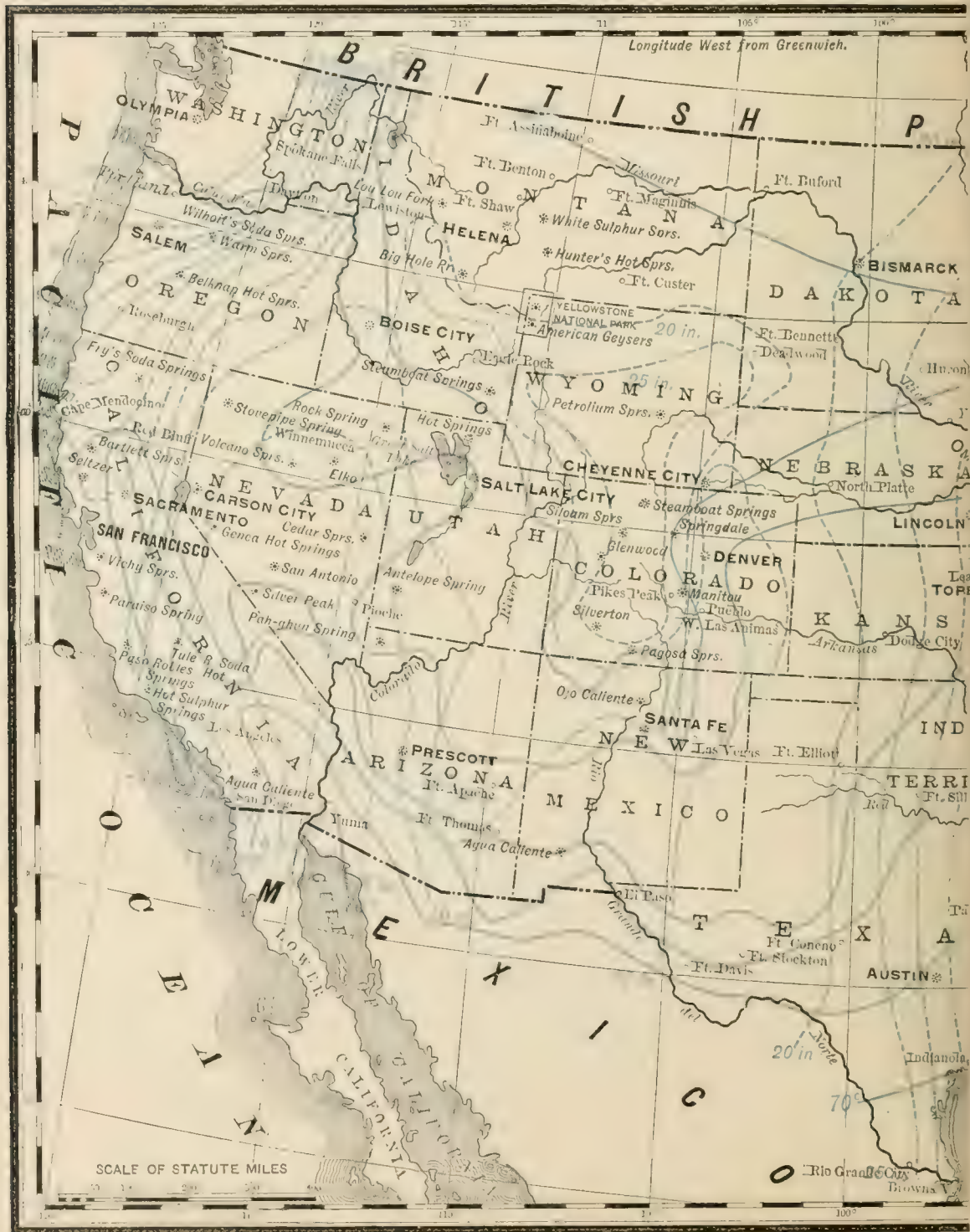
STATIONS.	WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	Mean temperature since estab- lishment.	Mean daily range of tempera- ture, 1883.	Mean monthly range tempera- ture since establishment.	Average of extreme annual range of temperature, 1882, 1883 and 1884.	Mean of maximum tempera- tures, 1883.	Mean of minimum tempera- tures, 1884.	Mean precipitation, in inches, since establishment.
Albany.....N. Y.	Dec., '73	48	15	47	98	60	43	38
Alpena.....Mich.	Sept., '72	41	15	50	112	50	35	38
Apache, Fort.....Ariz.	Oct., '77	52	36	59	101	71	35	22
Assinaboine, Fort.....Mont.	Oct., '75	40	22	62	135	54	32	14
Atlanta.....Ga.	Sept., '78	62	16	43	84	70	54	57
Atlantic City.....N. J.	Dec., '73	52	13	43	89	59	46	42
Augusta.....Ga.	Nov., '70	65	19	43	79	75	56	50
Baltimore.....Md.	Jan., '71	56	14	45	88	62	49	42
Barnegat City.....N. J.	Dec., '73	51	12	42	87	58	45	52
Bennett, Fort.....Dak.	Dec., '79	43	25	64	133	59	34	18
Benton, Fort.....Mont.	Dec., '79	42	25	69	139	58	33	15
Bismarck.....Dak.	Sept., '74	40	21	61	124	52	31	21
Block Island.....R. I.	Sept., '80	50	11	35	85	55	45	53
Lewiston.....Idaho	July, '79	50	20	48	112	62	42	18
Little Rock.....Ark.	July, '79	63	16	43	85	55	56	15
Los Angeles.....Cal.	July, '77	61	24	43	70	73	49	15
Louisville.....Ky.	Sept., '71	57	16	48	97	66	51	48
Lynchburg.....Va.	May, '71	57	17	46	88	66	49	41
Mackinaw City.....Mich.	Aug., '82	40	17	47	97	47	31	38
Macon, Fort.....N. C.	May, '78	62	13	35	72	71	56	65
Maginnis, Fort.....Mont.	July, '82	48	19	61	126	50	30	12
Marquette.....Mich.	May, '71	41	14	52	108	49	35	32
Memphis.....Tenn.	Feb., '71	61	16	44	88	71	55	55
Milwaukee.....Wis.	Nov., '70	45	14	49	108	54	41	34
Mobile.....Ala.	Nov., '70	67	17	38	79	78	61	66
Montgomery.....Ala.	Nov., '70	65	18	43	84	76	57	54



Boise City	Idaho	July,	77	50	24	51	114	61	37	13	Moorehead	Minn.	Jan.,	81	37	21	57	135	49	29	29
Boston	Mass.	Nov.,	70	48	18	50	107	58	40	48	Mount Washington	N. H.	Dec.,	70	26	11	49	106	33	19	83
Brownsville	Texas	Aug.,	75	73	16	38	70	81	66	32	Nashville	Tenn.	Nov.,	70	60	17	46	84	70	32	52
Buffalo	N. Y.	Nov.,	70	47	13	45	95	53	40	37	New Haven	Conn.	Dec.,	72	50	17	45	97	58	41	51
Buford, Fort	Dak.	Oct.,	78	38	25	67	141	51	39	16	New London	Conn.	Jan.,	71	49	15	42	95	57	42	48
Cairo	Ill.	June,	71	58	14	46	88	67	52	47	New Orleans	La.	Nov.,	70	69	13	32	66	78	65	65
Cape Henry	Va.	Dec.,	73	59	13	43	84	65	52	59	New York	N. Y.	Nov.,	70	51	14	44	93	60	45	42
Cape May	N. J.	May,	71	53	12	35	78	61	49	48	Norfolk	Va.	Jan.,	71	59	15	44	82	67	52	52
Cape Mendocino	Cal.	July,	82	70	12	30	57	58	46	19	North Platte	Neb.	Sept.,	74	48	24	62	117	69	40	20
Cedar Keys	Fla.	Nov.,	79	71	13	32	65	77	65	59	Olympia	Wash.	July,	77	49	16	39	83	57	41	64
Charleston	S. C.	Jan.,	71	67	15	37	79	75	60	60	Omaha	Neb.	Nov.,	70	50	18	55	115	61	42	36
Chattanooga	Tenn.	Jan.,	79	61	17	44	86	69	53	60	Oswego	N. Y.	Nov.,	70	47	15	46	102	56	41	36
Charlottesville	N. C.	Oct.,	78	60	17	45	87	69	52	53	Palestine	Texas	Dec.,	81	46	18	43	84	76	58	49
Cheney	Wyo.	Nov.,	70	44	26	60	120	58	32	11	Pensacola	Fla.	Oct.,	79	64	14	36	69	74	62	69
Chicago	Ill.	Nov.,	70	55	13	48	104	57	43	38	Philadelphia	Pa.	Jan.,	71	53	14	43	90	62	48	41
Cincinnati	Va.	March,	80	56	14	46	93	65	50	44	Pike's Peak	Col.	Nov.,	73	19	13	42	89	25	13	31
Cleveland	Ohio	Nov.,	70	49	15	49	100	57	42	38	Pittsburg	Pa.	Nov.,	70	52	18	53	99	62	44	36
Columbus	Ohio	July,	78	53	16	49	103	61	46	44	Port Huron	Mich.	July,	74	50	15	48	104	54	39	35
Concho	Texas	Oct.,	75	64	25	54	97	78	53	28	Portland	Me.	Jan.,	71	52	17	39	81	61	41	54
Custer, Fort	Mont.	Dec.,	78	44	25	46	132	59	34	14	Prescott	Ore.	Nov.,	73	52	32	58	99	68	37	14
Davenport	Iowa	May,	71	50	17	49	109	60	42	36	Provincetown	Mass.	Feb.,	82	48	13	39	91	53	42	47
Davis, Fort	Texas	Dec.,	77	60	26	54	93	73	47	20	Pioche	Nev.	July,	77	50	23	50	93	61	37	6
Dayton	W. T.	July,	79	48	22	55	116	60	38	29	Red Bluff	Cal.	July,	77	63	23	46	82	73	50	29
Deadwood	Dak.	Nov.,	78	42	20	59	119	54	34	28	Rio Grande City	Texas	May,	75	74	20	48	76	84	64	22
Delaware Breakwater	Del.	Jan.,	80	54	12	38	79	60	48	33	Rochester	N. Y.	Nov.,	70	47	15	50	100	55	39	37
Denver	Col.	Nov.,	71	49	24	59	107	62	39	15	Roseburg	Ore.	July,	77	60	20	44	84	62	49	22
Dos Moines	Iowa	Aug.,	78	49	18	54	116	64	41	41	Sacramento	Cal.	July,	77	60	21	44	77	70	42	36
Detroit	Mich.	Nov.,	70	48	14	48	95	58	44	35	Saint Louis	Mo.	Nov.,	70	55	18	50	106	65	48	30
Dodge City	Kan.	Sept.,	74	53	26	60	112	68	42	20	Saint Paul	Minn.	Nov.,	70	44	19	53	120	56	37	38
Dubuque	Iowa	July,	73	48	20	52	113	58	39	39	Saint Vincent	Minn.	Sept.,	80	53	21	59	135	45	28	19
Duluth	Minn.	Nov.,	70	40	14	46	124	54	34	33	Salt Lake City	Utah	March,	74	51	19	46	109	59	40	17
Eagle Rock	Idaho	Dec.,	80	43	26	58	133	54	27	19	San Diego	Cal.	Nov.,	71	60	15	31	57	68	53	10
Eastport	Me.	April,	73	41	14	40	97	49	34	49	Sandusky	Ohio	Aug.,	77	51	13	45	93	57	45	41
Elliott, Fort	Texas	Nov.,	79	54	25	61	103	69	43	21	Sandy Hook	N. J.	Dec.,	73	52	12	42	93	59	46	51
El Paso	Texas	Nov.,	77	64	30	52	96	79	48	11	San Francisco	Cal.	Jan.,	80	71	16	26	54	60	50	24
Eric	Pa.	May,	73	49	13	46	97	56	35	35	Savannah	Ga.	March,	71	67	16	38	75	76	60	53
Escanaba	Mich.	May,	81	40	15	46	106	50	35	43	Shaw, Fort	Mont.	April,	80	41	24	66	129	55	31	14
Fort Smith	Ark.	June,	82	59	22	53	102	73	50	42	Shreveport	La.	Sept.,	71	66	18	44	87	78	58	53
Galveston	Texas	April,	71	42	10	31	67	79	67	53	Sill, Fort	Ind. T.	June,	75	60	22	52	102	72	52	32
Grand Haven	Mich.	May,	71	60	23	44	90	54	48	38	Smithville	N. C.	Oct.,	75	63	14	40	78	70	56	53
Grant, Fort	Mich.	Nov.,	75	60	23	47	86	71	48	16	Spokane Falls	Wash. T.	Feb.,	79	53	16	48	102	62	46	49
Hattiesburg	N. C.	Dec.,	80	61	12	35	118	52	35	73	Stockton, Fort	Texas	July,	76	62	28	56	93	77	48	18
Helena	Mont.	Oct.,	79	43	23	56	124	56	45	15	Santa Fé	N. Mex.	Nov.,	71	48	24	50	95	61	38	14
Huron	Dak.	July,	81	43	23	60	104	62	33	27	Thomas, Camp	Ariz.	Sept.,	77	61	31	54	93	77	46	10
Indianapolis	Ind.	Feb.,	71	52	16	50	73	78	66	46	Toledo	Ohio	Nov.,	70	50	15	48	97	58	44	33
Indianola	Texas	May,	72	70	12	36	73	78	66	37	Vicksburg	Miss.	Sept.,	71	65	17	43	79	76	59	60
Keokuk	Iowa	Sept.,	71	60	15	38	70	79	63	53	Visalia	Cal.	July,	77	61	27	48	83	73	47	9
Kew West	Fla.	July,	71	52	16	51	106	61	45	38	Washington	D. C.	Nov.,	70	55	17	48	92	54	47	43
Kitty Hawk	N. C.	Nov.,	70	78	10	22	82	83	74	41	West Las Animas	Col.	Oct.,	81	50	32	58	114	68	36	11
Knoxville	Tenn.	Jan.,	75	60	13	39	83	66	53	66	Wilmington	N. C.	Jan.,	71	63	15	43	79	72	44	58
La Crosse	Wis.	Oct.,	71	57	19	47	95	69	50	53	Winnemucca	Nev.	July,	77	49	28	59	119	61	33	8
La Mesilla	N. Mex.	Nov.,	72	47	15	53	116	55	40	31	Yankton	Dak.	April,	73	46	22	61	119	59	38	28
Leavenworth	Kan.	May,	71	53	34	57	88	79	45	8	Yuma	Ariz.	Nov.,	73	72	27	47	88	55	58	2



AVERAGING NEARLY 11 YEARS.





————— ISOTHERMS (mean annual temperatures) since commencement of observations.

----- RAINFALL (and melted snow), in inches, since commencement.





## DESCRIPTION OF ANNUAL CHARTS, WITH STATISTICAL TABLES.

**ELEVATIONS** The elevations given in the tables are the distances, in feet, above sea level of the observation stations of the Signal Service Bureau, and are approximately accurate as representing the cities where these stations are.

**WINDS**—An important part of the climatic charts to agriculturists, and to those who wish to prognosticate the state of the weather, is the record of the winds as to what winds bring pleasant weather and what usher in rain. Besides these two important facts, the prevailing direction serves to show whether pleasant weather winds or rain-bearing winds are most likely to blow at any given place. All these three records are given by the *groups of arrows* which are scattered over the United States; the groups representing the regions in the centre of or near which they are given. The arrows being indicated by a distinct form of arrow (see explanations on map opposite). These winds are the averages for the year 1882, and they blow as the arrows fly on the map, the quarter of the earth's surface from which the pleasant-weather or rain-bearing winds come being pretty nearly constantly determined by a self-registering anemometer, and this valuable record is the Signal Stations were established by the miles per month travelled by the wind. *The comparative velocities* is further given as determined by these records. For instance, Pike's Peak (4) is the windiest and La Mesilla (122) the least windy of all the places where the records are complete for the year, while the average for Denver, rating her as the 56th, shows that there are 94 out of 132 stations which are more windy than the "City of the Plains."

**RELATIVE AND ABSOLUTE HUMIDITIES** *Relative humidity* is the per cent. of moisture the air holds to what it would contain if it were saturated with vapor. It is always expressed in hundredths (saturation being 100), and the annual averages for all the Signal Stations are given in these tables. A low average of relative humidity indicates the infrequency of fogs or

dew, as well as the presence of other qualities, as much sunshine and little rain, which produce a dry climate.

*Absolute humidity* is the real humidity of the air or the weight of vapor to a given space. It is usually reckoned in grains of vapor to the cubic foot of air. In this table the annual record for 1883 is given in grains and hundredths, while in the tables of the Seasonal Charts it is given in tenths of a grain of vapor to a cubic foot of air.

**DEW POINT**—This is the temperature at which the air will become more than saturated by the amount of vapor it contains. The annual mean dew point, which is that given in this table, is always lower than the given mean temperature of a place. The reason is this: the air can hold moisture according to its temperature, the larger amount of very great, *z.* from about one-half a grain to the cubic foot of air at zero to a relative humidity of 100. Fahrenheit (see absolute humidity table, page 20). Now the annual average of relative humidity almost never exceeds 90 per cent., so the temperature must be lowered for dew to be deposited. The explanation is similar, considering with reference to absolute humidity. A place which has its temperature reduced to 40°, when four grains will just exceed saturation. The greater the difference between the mean dew point and mean temperature of a place, the less frequently do fogs occur.

**VAPOR TENSION**—This is the elastic force of vapor, and represents the expansibility of the vapor of water in air currents. The moist air the greater is its elasticity or pressure. This elasticity is determined by the difference between the wet and dry bulb thermometers, and is expressed in hundredths of English inches (see table of annual means below). This method of expression is used because the expansibility of the air, due to the vapor it contains, is determined by the depression in inches of a column of mercury when acted on by this force.

TABLE OF ELEVATIONS, WIND VELOCITIES, COMPARATIVE WINDINESS, RELATIVE AND ABSOLUTE HUMIDITIES, DEW POINT AND MEAN VAPOR TENSION.

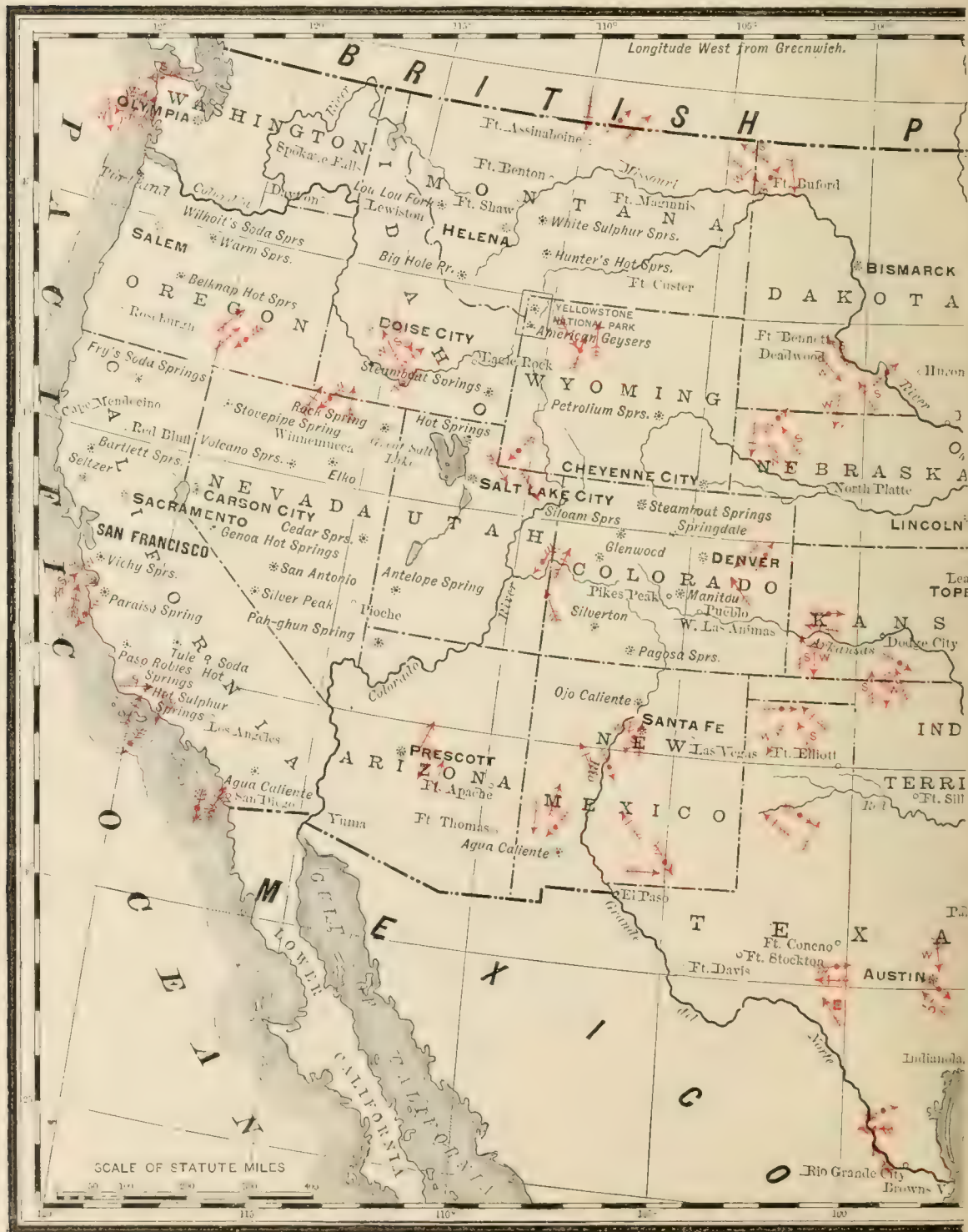
STATIONS.		When Signal Stations were estab- lished.	Elevation, in feet, above sea level.	Mean monthly movement of wind, in miles, since commencement.	Comparative windiness, 1 to 132, since commencement.	Mean relative humidity, two years ending 1883.	Mean absolute humidity, 1883, grains and hundredths, to cubic foot of air.	Mean of dew point, 1883.	Mean vapor tension, 1883.
Albany	N. Y.	Dec.	73	5034	58	63	3.09	96	23
Alpena	Mich.	Sept.	72	609	55	75	2.31	88	20
Apache, Fort	Ariz.	Oct.	71	5050	92	58	2.41	34	21
Assinaboine, Fort	Mont.	Oct.	79	7550	24	59	2.00	25	15
Atlanta	Ga.	Sept.	78	1131	53	69	4.31	50	38
Atlantic City	N. J.	Dec.	73	7239	30	78	3.58	44	33
Augusta	Ga.	Nov.	70	2762	127	69	4.92	54	44
Baltimore	Md.	Jan.	71	45	102	66	3.55	43	34
Barneget City	N. J.	Dec.	73	20	13	79	3.64	45	33
Bennett, Fort	Dak.	Dec.	79	1510	43	70	2.48	32	22
Benton, Fort	Mont.	Dec.	79	2700	72	59	1.90	26	16
Bismarck	Dak.	Sept.	74	1693	42	70	2.21	28	19
Block Island	R. I.	Sept.	80	10815	4	77	3.50	42	28
Lewiston	Idaho	July	79	780	130	60	2.45	35	21
Little Rock	Ark.	July	79	298	115	72	4.72	52	42
Los Angeles	Cal.	July	77	3719	120	66	4.00	49	25
Louisville	Ky.	Sept.	71	530	84	67	3.71	45	33
Lynchburg	Va.	May	71	652	129	62	3.48	43	31
Mackinaw City	Mich.	Aug.	82	7507	25	71	2.32	31	20
Macon, Fort	N. C.	May	78	9076	11	81	5.29	56	48
Maginnis, Fort	Mont.	July	82	8545	15	50	1.52	21	13
Marquette	Mich.	May	71	673	61	68	2.01	42	18
Memphis	Tenn.	Feb.	71	3955	111	70	4.55	51	41
Milwaukee	Wis.	Nov.	70	697	19	74	2.47	35	23
Mobile	Ala.	Nov.	70	69	4408	74	5.76	59	52
Montgomery	Ala.	Nov.	70	3391	109	69	5.00	54	44



Boise City	Idaho	July	77	2750	3403	123	61	2.40	34	21	Moorhead	Minn	Jan.	81	923	8134	18	76	2.12	28	18
Boston	Mass.	Nov.	70	142	6553	48	71	3.02	38	27	Mount Washington	N. H.	Dec.	70	6279	in table		87	1.63	22	15
Brownsville	Texas	Aug.	75	43	5101	86	80	6.67	61	52	Nashville	Tenn.	Nov.	70	507	3095	124	70	4.32	50	39
Buffalo	N. Y.	Nov.	70	696	6636	51	75	2.80	37	25	New Haven	Conn.	Dec.	72	107	5509	71	71	2.88	38	28
Buiford, Fort	Dak.	Oct.	78	1900	6068	63	70	2.04	37	18	New London	Conn.	Jan.	71	47	5288	79	73	3.00	40	30
Cairo	Ill.	June	71	377	5293	77	71	4.10	48	37	New Orleans	La.	Nov.	70	52	5340	75	71	5.97	60	54
Cape Henry	Va.	Dec.	73	16	9086	10	75	4.40	50	39	New York	N. Y.	Nov.	70	161	6719	44	72	3.11	41	29
Cape May	N. J.	May	71	27	9815	7	75	3.85	47	35	Norfolk	Va.	Jan.	71	30	5598	69	71	4.45	50	37
Cape Mendocino	Cal.	July	82		in table		81	3.71	45	32	North Platte	Neb.	Sept.	74	2841	8471	16	68	2.59	35	22
Cedar Keys	Fla.	Nov.	79	4	6715	45	75	6.70	61	61	Olympia	Wash.	July	77	36	2948	125	78	3.06	41	27
Charleston	S. C.	Jan.	71	52	4516	96	78	5.98	60	54	Omaha	Neb.	Nov.	70	1113	6176	54	67	3.06	37	27
Chattanooga	Tenn.	Jan.	79	783	4010	107	70	4.26	50	38	Oswego	N. Y.	Nov.	70	304	6266	58	70	2.78	33	24
Charlotte	N. C.	Oct.	78	808	4394	98	67	4.03	48	35	Palestine	Tex.	Dec.	81	533	5908	65	69	5.01	54	45
Cheyenne	Wyo.	Nov.	70	6089	7702	23	52	1.68	41	14	Pensacola	Fla.	Oct.	79	30	5639	68	76	5.94	60	54
Chicago	Ill.	Nov.	70	661	6144	59	72	2.80	36	25	Philadelphia	Pa.	Jan.	71	52	5079	34	73	4.07	47	36
Chincoteague	Va.	March	80	18	9061	12	80	4.08	45	38	Pike's Peak	Col.	Nov.	73	14134	14818	1	78	1.06	14	07
Cincinnati	Ohio	Nov.	70	620	4266	101	68	3.84	45	32	Pittsburg	Pa.	Nov.	70	766	4389	99	69	3.32	42	29
Cleveland	Ohio	Nov.	70	690	6820	41	71	2.84	45	32	Port Huron	Mich.	July	74	633	6972	38	79	2.78	36	24
Columbus	Ohio	July	78	805	5385	73	67	3.08	40	28	Portland	Me.	Jan.	71	45	5533	70	67	2.74	35	26
Concho	Texas	Oct.	75	1900	6560	52	66	4.13	49	38	Portland	Ore.	Nov.	71	67	3154	122	74	3.25	43	28
Custer, Fort	Mont.	Dec.	78	3040	5331	76	61	2.26	31	26	Prescott	Ariz.	Nov.	73	5340	4245	103	50	2.20	32	19
Davenport	Iowa	May	71	615	6136	60	66	3.15	37	26	Provincetown	Mass.	Feb.	82	7416	7416	27	74	3.13	40	27
Davis, Fort	Texas	Dec.	77	3337	3337	112	51	3.01	40	26	Pueblo	Nev.	July	77	6110	5289	78	43	1.60	24	14
Dayton	W. T.	July	79	1660	3853	116	67	2.54	35	21	Red Bluff	Cal.	July	77	350	4819	89	55	3.04	41	26
Deadwood	Dak.	Nov.	78	4600	2871	126	77	2.43	33	21	Rio Grande City	Texas	May	75	230	5813	66	68	6.38	63	37
Delaware Breakwater	Del.	Jan.	80	20	11400	3	80	3.99	47	35	Rochester	N. Y.	Nov.	70	621	6983	37	72	2.85	37	25
Denver	Col.	Nov.	71	5294	4580	95	53	2.14	30	18	Roseburg	Ore.	July	77	511	2760	128	71	3.07	41	26
Des Moines	Iowa	Aug.	78	849	4705	91	70	2.90	35	25	Sacramento	Cal.	July	77	70	4640	94	66	3.81	47	38
Detroit	Mich.	Nov.	70	661	5663	67	72	3.63	39	27	Saint Louis	Mo.	Nov.	70	568	7011	35	75	3.84	46	34
Dodge City	Kan.	Sept.	74	2512	8931	14	65	3.05	38	27	Saint Paul	Minn.	Nov.	70	811	6104	62	71	2.46	31	21
Dubuque	Iowa	July	73	665	3898	114	65	2.60	33	23	Saint Vincent	Minn.	Sept.	80	804	6746	49	81	2.02	28	18
Duluth	Minn.	Nov.	70	644	5270	80	73	2.24	29	19	Salt Lake City	Utah	March	74	4348	3739	117	44	2.01	29	16
Eagle Rock	Idaho	Dec.	80	4650	7458	26	59	1.65	29	14	San Diego	Cal.	Nov.	71	67	4318	100	69	4.19	50	37
Eastport	Me.	April	73	61	7095	33	74	2.42	32	21	Sandusky	Ohio	Aug.	77	639	9529	8	71	3.25	40	27
Elliot, Fort	Texas	Nov.	79	2630	8188	17	56	3.60	38	24	Sandy Hook	N. J.	Dec.	73	28	10196	6	74	4.10	43	31
El Paso	Texas	Nov.	77	3760	3761	118	47	2.72	37	23	San Francisco	Cal.	March	71	60	6863	40	76	3.80	47	33
Erie	Pa.	May	73	681	7408	28	73	3.02	42	26	Savannah	Ga.	Jan.	71	87	4771	90	70	5.43	57	49
Escanaba	Mich.	May	81	612	6895	39	75	2.22	30	20	Shaw, Fort	Mont.	April	80		7206	31	65	1.82	26	18
Fort Smith	Ark.	June	82		3738	119	70	4.22	48	38	Shreveport	La.	Sept.	71	227	3605	121	71	5.16	55	47
Galveston	Texas	April	71	40	7005	36	77	6.44	62	58	Sill, Fort	Ind. T.	June	75	1200	8013	20	64	3.93	46	35
Grand Haven	Mich.	May	71	630	7911	21	76	2.90	37	25	Smithville	N. C.	Oct.	75	31		79	5.28	56	47	
Grant, Fort	Ariz.	Nov.	75	4860	5250	81	47	2.43	35	23	Spokane Falls	Wash. T.	Feb.	81	1910	3998	108	69	2.47	35	21
Hatteras	N. C.	Dec.	80	19	11481	2	81	5.23	55	43	Springfield	Ill.	July	79	644	6666	47	68	3.84	39	34
Helen	Mont.	Oct.	79	4100	4167	105	65	2.40	33	21	Stockton, Fort	Texas	Feb.	76	3010	7318	29	64	3.86	46	29
Huron	Dak.	July	81	733	7848	32	71	2.38	31	24	Santa Fé	N. Mex.	Nov.	71	7064	5171	85	45	1.89	25	14
Indianapolis	Ind.	Feb.	71	746	4173	104	67	3.15	40	28	Thomas, Camp	Ariz.	Sept.	77			54	54	2.95	40	26
Indianola	Texas	May	72	26	9367	9	80	7.44	63	60	Toledo	Ohio	Nov.	70	651	6337	56	65	3.69	37	26
Jacksonville	Fla.	Sept.	71	43	4878	88	74	6.16	61	56	Vicksburg	Miss.	Sept.	71	244	3955	113	70	5.16	55	46
Keokuk	Iowa	July	71	618	5910	64	70	3.18	38	28	Visalia	Cal.	July	77	249	2291	131	59	3.30	43	29
Key West	Fla.	Nov.	70	27	7117	32	74	7.91	70	73	Washington	D. C.	Nov.	70	106	4640	93	72	3.64	44	32
Kitty Hawk	N. C.	Jan.	75	22	10783	5	78	4.67	52	42	West Las Animas	Col.	Oct.	81	3905	6639	50	52	2.05	29	18
Knoxville	Tenn.	Jan.	71	980	4102	105	72	4.05	48	36	Wilmington	N. C.	Jan.	71	52	5247	82	74	5.13	55	46
La Crosse	Wis.	Oct.	72	725	5372	74	66	2.44	33	23	Winnebago	Nev.	July	77	4327	6310	57	50	1.58	24	13
La Mesilla	N. Mex.	Nov.	77	3901	1721	132	46	2.46	34	21	Yankton	Dak.	April	73	1258	6703	46	68	2.73	34	11
Leavenworth	Kan.	May	71	842	5245	82	66	3.25	40	29	Yuma	Ariz.	Nov.	73	141	3988	110	46	4.12	48	37



## GIVING PREDICTIONS OF WEATHER.





WINDS—Blowing as the arrows fly. Each group of arrows represents the section in its vicinity.

←←← PREVAILING WINDS (winds blow as the arrows fly).

←←← WINDS LEAST LIKELY to be followed by rain or snow (quadrants indicated by the arrow's feather).

←←← WINDS MOST LIKELY to be followed by rain or snow.

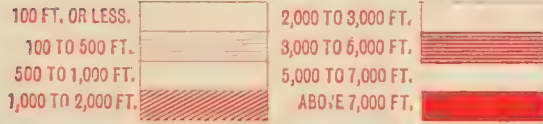








Elevations above Sea Level.









## RULE OF MOISTURE AND DRYNESS.

First find, for the given time and place, the per cent. of relative humidity and cloudiness, and the absolute humidity in tenths of a grain of vapor to the cubic foot of air. Then compute the difference between one-third of these three and the standard number given opposite the proper temperature in the *Rating Table*, and the result, plus or minus, will show the relation of the given climate to the average for the United States. An excess of six belongs to *moderate moisture*, and over six to *extreme moisture*, while a deficiency of six locates a place in *moderate dryness*, and over six in *extreme dryness*.

NOTE.—The maps are colored on the basis of statistics for the year 1883—a year which, for most of the United States, averaged colder by nearly two degrees than the averaged temperature for many years (11 or less). The general results would not be greatly changed were both humidity and cloudiness statistics obtainable for long periods. The 1883 temperatures are given in the seasonal statistics below.

Means for determining Moisture or I				one-third of the sum of 44½ per				per cent. of saturation			
Temp. of Air, (cloud as rel. and abs.)	Mean of Temp. of Air, (cloud as rel. and abs.)	Temp. of Air, (cloud as rel. and abs.)	Mean of Temp. of Air, (cloud as rel. and abs.)	Temp. of Air, (cloud as rel. and abs.)	Mean of Temp. of Air, (cloud as rel. and abs.)	Temp. of Air, (cloud as rel. and abs.)	Mean of Temp. of Air, (cloud as rel. and abs.)	Temp. of Air, (cloud as rel. and abs.)	Mean of Temp. of Air, (cloud as rel. and abs.)	Temp. of Air, (cloud as rel. and abs.)	Mean of Temp. of Air, (cloud as rel. and abs.)
43	41.1	27	38.4	43	41.1	27	38.4	43	41.1	27	38.4
43	41.4	29	38.5	43	41.5	30	38.6	43	41.5	30	38.6
44	41.9	32	38.7	44	41.9	32	38.7	44	41.9	32	38.7
45	42.1	33	38.9	45	42.1	33	38.9	45	42.1	33	38.9
46	42.3	34	39.0	46	42.3	34	39.0	46	42.3	34	39.0
47	42.5	35	39.2	47	42.5	35	39.2	47	42.5	35	39.2
48	42.7	36	39.4	48	42.7	36	39.4	48	42.7	36	39.4
49	42.9	37	39.6	49	42.9	37	39.6	49	42.9	37	39.6
50	43.1	38	39.8	50	43.1	38	39.8	50	43.1	38	39.8
51	43.3	39	40.1	51	43.3	39	40.1	51	43.3	39	40.1
52	43.6	40	40.3	52	43.6	40	40.3	52	43.6	40	40.3
53	43.8	41	40.5	53	43.8	41	40.5	53	43.8	41	40.5
54	44.1	42	40.7	54	44.1	42	40.7	54	44.1	42	40.7
Boise Island	R. I.	Sept., '89		Boise Island	R. I.	Sept., '89		Boise Island	R. I.	Sept., '89	
Boise City	Idaho	July, '77		Boise City	Idaho	July, '77		Boise City	Idaho	July, '77	
Boston	Mass.	Nov., '70		Boston	Mass.	Nov., '70		Boston	Mass.	Nov., '70	
Brownsville	Tenn.	Aug., '75		Brownsville	Tenn.	Aug., '75		Brownsville	Tenn.	Aug., '75	
Buffalo	N. Y.	Nov., '70		Buffalo	N. Y.	Nov., '70		Buffalo	N. Y.	Nov., '70	
Bufoed, Ft.	Dak.	Oct., '78		Bufoed, Ft.	Dak.	Oct., '78		Bufoed, Ft.	Dak.	Oct., '78	
Cairo	Ill.	June, '71		Cairo	Ill.	June, '71		Cairo	Ill.	June, '71	
Cape Henry	Va.	Dec., '73		Cape Henry	Va.	Dec., '73		Cape Henry	Va.	Dec., '73	
Cape May	N. J.	May, '71		Cape May	N. J.	May, '71		Cape May	N. J.	May, '71	
Cape Mendocino	Cal.	July, '82		Cape Mendocino	Cal.	July, '82		Cape Mendocino	Cal.	July, '82	
Cedar Keys	Fla.	Nov., '79		Cedar Keys	Fla.	Nov., '79		Cedar Keys	Fla.	Nov., '79	
Charlotte	S. C.	Jan., '79		Charlotte	S. C.	Jan., '79		Charlotte	S. C.	Jan., '79	
Chattanooga	Tenn.	Oct., '78		Chattanooga	Tenn.	Oct., '78		Chattanooga	Tenn.	Oct., '78	
Chicagone	Wyo.	Nov., '70		Chicagone	Wyo.	Nov., '70		Chicagone	Wyo.	Nov., '70	
Chicago	Ill.	Nov., '70		Chicago	Ill.	Nov., '70		Chicago	Ill.	Nov., '70	
Chincoteague	Va.	Feb., '80		Chincoteague	Va.	Feb., '80		Chincoteague	Va.	Feb., '80	
Cincinnati	Ohio	Nov., '70		Cincinnati	Ohio	Nov., '70		Cincinnati	Ohio	Nov., '70	
Cleveland	Ohio	Nov., '70		Cleveland	Ohio	Nov., '70		Cleveland	Ohio	Nov., '70	
Columbus	Ohio	July, '78		Columbus	Ohio	July, '78		Columbus	Ohio	July, '78	
Coucho, Ft.	Tex.	Oct., '75		Coucho, Ft.	Tex.	Oct., '75		Coucho, Ft.	Tex.	Oct., '75	
Custer, Ft.	Mont	Dec., '78		Custer, Ft.	Mont	Dec., '78		Custer, Ft.	Mont	Dec., '78	
Davenport	Ia.	May, '71		Davenport	Ia.	May, '71		Davenport	Ia.	May, '71	
Davis, Ft.	Tex.	Dec., '77		Davis, Ft.	Tex.	Dec., '77		Davis, Ft.	Tex.	Dec., '77	
Dayton	Wash.	July, '79		Dayton	Wash.	July, '79		Dayton	Wash.	July, '79	
Deadwood	Dak.	Nov., '78		Deadwood	Dak.	Nov., '78		Deadwood	Dak.	Nov., '78	
Del. Breakwater	Del.	Jan., '80		Del. Breakwater	Del.	Jan., '80		Del. Breakwater	Del.	Jan., '80	
Denver	Col.	Nov., '71		Denver	Col.	Nov., '71		Denver	Col.	Nov., '71	
Des Moines	Ia.	Aug., '78		Des Moines	Ia.	Aug., '78		Des Moines	Ia.	Aug., '78	
Detroit	Mich.	Nov., '70		Detroit	Mich.	Nov., '70		Detroit	Mich.	Nov., '70	
Dodge City, Kan.	Kan.	Sept., '74		Dodge City, Kan.	Kan.	Sept., '74		Dodge City, Kan.	Kan.	Sept., '74	
Dubuque	Ia.	July, '73		Dubuque	Ia.	July, '73		Dubuque	Ia.	July, '73	
Duluth	Minn.	Nov., '70		Duluth	Minn.	Nov., '70		Duluth	Minn.	Nov., '70	
Eagle Rock	Idaho	Dec., '80		Eagle Rock	Idaho	Dec., '80		Eagle Rock	Idaho	Dec., '80	
Eastport	Me.	Apr., '73		Eastport	Me.	Apr., '73		Eastport	Me.	Apr., '73	
Elliott, Ft.	Tex.	Nov., '79		Elliott, Ft.	Tex.	Nov., '79		Elliott, Ft.	Tex.	Nov., '79	
El Paso	Tex.	Nov., '77		El Paso	Tex.	Nov., '77		El Paso	Tex.	Nov., '77	
Erie	Pa.	May, '73		Erie	Pa.	May, '73		Erie	Pa.	May, '73	
Escanaba	Mich.	May, '81		Escanaba	Mich.	May, '81		Escanaba	Mich.	May, '81	
Fort Smith	Ark.	June, '82		Fort Smith	Ark.	June, '82		Fort Smith	Ark.	June, '82	
Galveston	Tex.	Apr., '71		Galveston	Tex.	Apr., '71		Galveston	Tex.	Apr., '71	
Grand Haven	Mich.	May, '71		Grand Haven	Mich.	May, '71		Grand Haven	Mich.	May, '71	
Grant, Ft.	Ariz.	Nov., '75		Grant, Ft.	Ariz.	Nov., '75		Grant, Ft.	Ariz.	Nov., '75	
Hatteras	N. C.	Dec., '80		Hatteras	N. C.	Dec., '80		Hatteras	N. C.	Dec., '80	
Helena	Mont	Oct., '79		Helena	Mont	Oct., '79		Helena	Mont	Oct., '79	
Huron	Dak.	July, '81		Huron	Dak.	July, '81		Huron	Dak.	July, '81	
Indianapolis	Ind.	Feb., '71		Indianapolis	Ind.	Feb., '71		Indianapolis	Ind.	Feb., '71	
Indianaola	Tex.	May, '72		Indianaola	Tex.	May, '72		Indianaola	Tex.	May, '72	
Jacksonville	Fla.	Sept., '71		Jacksonville	Fla.	Sept., '71		Jacksonville	Fla.	Sept., '71	
Keokuk	Ia.	July, '71		Keokuk	Ia.	July, '71		Keokuk	Ia.	July, '71	
Key West	Fla.	Nov., '70		Key West	Fla.	Nov., '70		Key West	Fla.	Nov., '70	
Kittyhawk	N. C.	Jan., '75		Kittyhawk	N. C.	Jan., '75		Kittyhawk	N. C.	Jan., '75	
Knoxville	Tenn.	Jan., '71		Knoxville	Tenn.	Jan., '71		Knoxville	Tenn.	Jan., '71	
La Crosse	Wis.	Oct., '72		La Crosse	Wis.	Oct., '72		La Crosse	Wis.	Oct., '72	
La Mesilla	N. M.	Nov., '77		La Mesilla	N. M.	Nov., '77		La Mesilla	N. M.	Nov., '77	
Leavenworth	Kan.	May, '71		Leavenworth	Kan.	May, '71		Leavenworth	Kan.	May, '71	
Montgomery	Ala.	Nov., '70		Montgomery	Ala.	Nov., '70		Montgomery	Ala.	Nov., '70	
Moorhead	Minn.	Jan., '81		Moorhead	Minn.	Jan., '81		Moorhead	Minn.	Jan., '81	
Mt. Washington	N. H.	Dec., '70		Mt. Washington	N. H.	Dec., '70		Mt. Washington	N. H.	Dec., '70	
Nashville	Tenn.	Nov., '70		Nashville	Tenn.	Nov., '70		Nashville	Tenn.	Nov., '70	
New Haven	Conn.	Dec., '72		New Haven	Conn.	Dec., '72		New Haven	Conn.	Dec., '72	
New London	Conn.	Jan., '71		New London	Conn.	Jan., '71		New London	Conn.	Jan., '71	
New Orleans	La	Nov., '70		New Orleans	La	Nov., '70		New Orleans	La	Nov., '70	
New York	N. Y.	Nov., '70		New York	N. Y.	Nov., '70		New York	N. Y.	Nov., '70	
Norfolk	Va.	Jan., '71		Norfolk	Va.	Jan., '71		Norfolk	Va.	Jan., '71	
North Platte	Neb.	Sept., '74		North Platte	Neb.	Sept., '74		North Platte	Neb.	Sept., '74	
Olympia	Wash.	July, '77		Olympia	Wash.	July, '77		Olympia	Wash.	July, '77	
Omaha	Neb.	Nov., '70		Omaha	Neb.	Nov., '70		Omaha	Neb.	Nov., '70	
Oswego	N. Y.	Nov., '70		Oswego	N. Y.	Nov., '70		Oswego	N. Y.	Nov., '70	
Palestine	Tex.	Dec., '81		Palestine	Tex.	Dec., '81		Palestine	Tex.	Dec., '81	
Pensacola	Fla.	Oct., '79		Pensacola	Fla.	Oct., '79		Pensacola	Fla.	Oct., '79	
Philadelphia	Pa.	Jan., '71		Philadelphia	Pa.	Jan., '71		Philadelphia	Pa.	Jan., '71	
Pike's Peak	Col.	Nov., '73		Pike's Peak	Col.	Nov., '73		Pike's Peak	Col.	Nov., '73	
Poebe	Nev.	July, '77		Poebe	Nev.	July, '77		Poebe	Nev.	July, '77	
Pittsburg	Pa.	Nov., '70		Pittsburg	Pa.	Nov., '70		Pittsburg	Pa.	Nov., '70	
Port Huron	Mich.	July, '74		Port Huron	Mich.	July, '74		Port Huron	Mich.	July, '74	
Portland	Me.	Jan., '71		Portland	Me.	Jan., '71		Portland	Me.	Jan., '71	
Portland	Oregon	Nov., '71		Portland	Oregon	Nov., '71		Portland	Oregon	Nov., '71	
Prescott	Ariz.	Nov., '73		Prescott	Ariz.	Nov., '73		Prescott	Ariz.	Nov., '73	
Provincetown	Mass.	Feb., '82		Provincetown	Mass.	Feb., '82		Provincetown	Mass.	Feb., '82	
Red Bluff	Cal.	July, '77		Red Bluff	Cal.	July, '77		Red Bluff	Cal.	July, '77	
Rio Grande City	Tex.	May, '75		Rio Grande City	Tex.	May, '75		Rio Grande City	Tex.	May, '75	
Rochester	N. Y.	Nov., '70		Rochester	N. Y.	Nov., '70		Rochester	N. Y.	Nov., '70	
Roseburg	Oregon	July, '77		Roseburg	Oregon	July, '77		Roseburg	Oregon	July, '77	
Sacramento	Cal.	July, '77		Sacramento	Cal.	July, '77		Sacramento	Cal.	July, '77	
Saint Louis	Mo.	Nov., '70		Saint Louis	Mo.	Nov., '70		Saint Louis	Mo.	Nov., '70	
Saint Paul	Minn.	Nov., '70		Saint Paul	Minn.	Nov., '70		Saint Paul	Minn.	Nov., '70	
Saint Vincent	Minn.	Sept., '80		Saint Vincent	Minn.	Sept., '80		Saint Vincent	Minn.	Sept., '80	
Salt Lake City	Utah	Mar., '74		Salt Lake City	Utah	Mar., '74		Salt Lake City	Utah	Mar., '74	
San Diego	Cal.	Nov., '71		San Diego	Cal.	Nov., '71		San Diego	Cal.	Nov., '71	
Sandusky	Ohio	Aug., '77		Sandusky	Ohio	Aug., '77		Sandusky	Ohio	Aug., '77	
Sandy Hook	N. J.	Dec., '73		Sandy Hook	N. J.	Dec., '73		Sandy Hook	N. J.	Dec., '73	
San Francisco	Cal.	Mar., '71		San Francisco	Cal.	Mar., '71		San Francisco	Cal.	Mar., '71	
Santa Fe	N. M.	Nov., '71		Santa Fe	N. M.	Nov., '71		Santa Fe	N. M.	Nov., '71	
Savannah	Ga.	Jan., '71		Savannah	Ga.	Jan., '71		Savannah	Ga.	Jan., '71	
Shaw, Ft.	Mont.	Apr., '80		Shaw, Ft.	Mont.	Apr., '80		Shaw, Ft.	Mont.	Apr., '80	
Shreveport	La	Sept., '71		Shreveport	La	Sept., '71		Shreveport	La	Sept., '71	
Sill, Ft.	Ind. Ter.	June, '75		Sill, Ft.	Ind. Ter.	June, '75		Sill, Ft.	Ind. Ter.	June, '75	
Smithville	N. C.	Oct., '75		Smithville	N. C.	Oct., '75		Smithville	N. C.	Oct., '75	
Spokane Falls	Wash.	Feb., '81		Spokane Falls	Wash.	Feb., '81		Spokane Falls	Wash.	Feb., '81	
Springfield	Wash.	July, '79		Springfield	Wash.	July, '79		Springfield	Wash.	July, '79	
Stockton, Ft.	Tex.	Feb., '76		Stockton, Ft.	Tex.	Feb., '76		Stockton, Ft.	Tex.	Feb., '76	
Thomas, Camp	Ariz.	Sept., '77		Thomas, Camp	Ariz.	Sept., '77		Thomas, Camp	Ariz.	Sept., '77	
Toledo	Ohio	Nov., '70		Toledo	Ohio	Nov., '70		Toledo	Ohio	Nov., '70	
Vicksburg	Miss.	Sept., '71		Vicksburg	Miss.	Sept., '71		Vicksburg	Miss.	Sept., '71	
Visalia	Cal.	July, '77		Visalia	Cal.	July, '77		Visalia	Cal.	July, '77	
Washington	D. C.	Nov., '70		Washington	D. C.	Nov., '70		Washington	D. C.	Nov., '70	
West Las Animas	Col.	Oct., '81		West Las Animas	Col.	Oct., '81		West Las Animas	Col.	Oct., '81	
Wilmington	N. C.	Jan., '71		Wilmington	N. C.	Jan., '71		Wilmington	N. C.	Jan., '71	
Winumueca	Nev.	July, '77		Winumueca	Nev.	July, '77		Winumueca	Nev.	July, '77	
Yankton	Dak.	Apr., '73		Yankton	Dak.	Apr., '73		Yankton	Dak.	Apr., '73	
Yuma	Ariz.	Nov., '73		Yuma	Ariz.	Nov., '73		Yuma	Ariz.	Nov., '73	



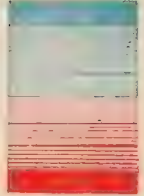


CLIMATE.

MOISTURE.....

Extreme.....	2d half.
1st .....	1st "
Moderate .....	2d "
1st .....	1st "
Moderate .....	2d "
2d .....	1st "
Extreme.....	2d "

DRYNESS.....





(CONTINUED FROM PAGE 16.)

official and unbiased records of the Signal Service Bureau. This is a much needed definition is obtained, if we turn to the *meteo.* and *hydro.* mean as applied to climate. The most varied bodies are each divided into four even divisions, which are respectively represented by the blue and red shades on the Seals and Charts. Thus the seasonal peculiarities of localities, and the relation of seasons to each other, are thus well illustrated. For instance the large area (see Weather chart) in the Northwest and in the Northern Lake and Central River regions, which are thrown into the solid blue shade of the extreme of moisture by the cold of Winter, and the equally large area (see Sunken chart) in the Southwest that is thrown into the solid red shade of the extreme of dryness by the heat of Summer. Thus the laws which govern the diffusion of heat and terrestrial radiation are at many points illustrated by these charts. It is hoped this seasonal presentation of combined humidities will be appreciated, especially by those who would avoid unpleasant weather in the season by a temporary removal to a more genial climate.

## STATISTICS FOR SUMMER.

TABLE GIVING MEAN CLOUDINESS, MEAN RELATIVE HUMIDITY, MEAN ABSOLUTE HUMIDITY AND MEAN TEMPERATURE FOR 1883; THE STATISTICS USED IN DETERMINING THE COLORS AND SHADES IN THE ACCOMPANYING MOISTURE AND DRYNESS CHART FOR SUMMER

LUTE HUMIDITY TABLE.—(GUYOT'S No. X.)									
To find the relative humidity of a place being known, the actual humidity, in grains, may be approximately determined by the known temperature, by the relative humidity, i. e., the per cent. of saturation. Where relative humidity is known, the actual humidity of a place being known, the proper weight of saturation given above.									
Weight of Temp. in F.	Weight of Temp. in C.	Weight of Sat. in Grains.	Weight of Air in Grains.	Relative Humidity.	Weight of Temp. in F.	Weight of Temp. in C.	Weight of Sat. in Grains.	Weight of Air in Grains.	Relative Humidity.
18.16	97°	12.76	87°	8.80	24.47	129	54.93	160	31.74
18.69	98	13.15	86	9.08	25.01	130	55.81	161	32.46
19.23	99	13.55	87	9.37	25.55	131	56.70	162	33.18
20.30	100	14.81	88	9.67	26.09	132	57.60	163	33.91
20.84	101	15.25	89	9.98	26.63	133	58.50	164	34.65
20.94	102	15.71	90	10.29	27.17	134	59.41	165	35.40
21.53	103	16.18	91	10.62	27.71	135	60.33	166	36.15
22.15	104	16.65	92	10.95	28.25	136	61.25	167	36.91
22.78	105	17.14	93	11.29	28.79	137	62.18	168	37.67
23.41	106	17.65	94	11.64	29.33	138	63.11	169	38.44
24.04	107	18.17	95	12.00	29.87	139	64.05	170	39.21
24.67	108	18.70	96	12.38	30.41	140	65.00	171	39.99
25.30	109	19.24	97	12.76	30.95	141	65.95	172	40.77
25.93	110	19.79	98	13.15	31.49	142	66.91	173	41.56
26.56	111	20.34	99	13.55	32.03	143	67.86	174	42.36
27.19	112	20.90	100	13.96	32.57	144	68.81	175	43.16
27.82	113	21.47	101	14.38	33.11	145	69.76	176	43.97
28.45	114	22.04	102	14.81	33.65	146	70.71	177	44.78
29.08	115	22.62	103	15.25	34.19	147	71.66	178	45.60
29.71	116	23.21	104	15.71	34.73	148	72.61	179	46.42
30.34	117	23.81	105	16.18	35.27	149	73.56	180	47.25
30.97	118	24.42	106	16.65	35.81	150	74.51	181	48.08
31.60	119	25.04	107	17.14	36.35	151	75.46	182	48.92
32.23	120	25.67	108	17.65	36.89	152	76.41	183	49.76
32.86	121	26.31	109	18.17	37.43	153	77.36	184	50.61
33.49	122	26.96	110	18.70	37.97	154	78.31	185	51.46
34.12	123	27.62	111	19.24	38.51	155	79.26	186	52.32
34.75	124	28.29	112	19.79	39.05	156	80.21	187	53.18
35.38	125	28.96	113	20.34	39.59	157	81.16	188	54.05
36.01	126	29.64	114	20.90	40.13	158	82.11	189	54.93
36.64	127	30.33	115	21.47	40.67	159	83.06	190	55.81
37.27	128	31.03	116	22.04	41.21	160	84.01	191	56.70
37.90	129	31.74	117	22.62	41.75	161	84.96	192	57.60
38.53	130	32.46	118	23.21	42.29	162	85.91	193	58.50
39.16	131	33.18	119	23.81	42.83	163	86.86	194	59.41
39.79	132	33.91	120	24.42	43.37	164	87.81	195	60.33
40.42	133	34.65	121	25.04	43.91	165	88.76	196	61.25
41.05	134	35.40	122	25.67	44.45	166	89.71	197	62.18
41.68	135	36.15	123	26.31	44.99	167	90.66	198	63.11
42.31	136	36.91	124	26.96	45.53	168	91.61	199	64.05
42.94	137	37.67	125	27.62	46.07	169	92.56	200	65.00
43.57	138	38.44	126	28.29	46.61	170	93.51	201	65.95
44.20	139	39.21	127	28.96	47.15	171	94.46	202	66.91
44.83	140	39.99	128	29.64	47.69	172	95.41	203	67.86
45.46	141	40.77	129	30.33	48.23	173	96.36	204	68.81
46.09	142	41.56	130	31.03	48.77	174	97.31	205	69.76
46.72	143	42.36	131	31.74	49.31	175	98.26	206	70.71
47.35	144	43.16	132	32.46	49.85	176	99.21	207	71.66
47.98	145	43.97	133	33.18	50.39	177	100.16	208	72.61
48.61	146	44.78	134	33.91	50.93	178	101.11	209	73.56
49.24	147	45.60	135	34.65	51.47	179	102.06	210	74.51
49.87	148	46.42	136	35.40	52.01	180	103.01	211	75.46
50.50	149	47.25	137	36.15	52.55	181	103.96	212	76.41
51.13	150	48.08	138	36.91	53.09	182	104.91	213	77.36
51.76	151	48.92	139	37.67	53.63	183	105.86	214	78.31
52.39	152	49.76	140	38.44	54.17	184	106.81	215	79.26
53.02	153	50.61	141	39.21	54.71	185	107.76	216	80.21
53.65	154	51.46	142	39.99	55.25	186	108.71	217	81.16
54.28	155	52.32	143	40.77	55.79	187	109.66	218	82.11
54.91	156	53.18	144	41.56	56.33	188	110.61	219	83.06
55.54	157	54.05	145	42.36	56.87	189	111.56	220	84.01
56.17	158	54.93	146	43.16	57.41	190	112.51	221	84.96
56.80	159	55.81	147	43.97	57.95	191	113.46	222	85.91
57.43	160	56.70	148	44.78	58.49	192	114.41	223	86.86
58.06	161	57.60	149	45.60	59.03	193	115.36	224	87.81
58.69	162	58.50	150	46.42	59.57	194	116.31	225	88.76
59.32	163	59.41	151	47.25	60.11	195	117.26	226	89.71
59.95	164	60.33	152	48.08	60.65	196	118.21	227	90.66
60.58	165	61.25	153	48.92	61.19	197	119.16	228	91.61
61.21	166	62.18	154	49.76	61.73	198	120.11	229	92.56
61.84	167	63.11	155	50.61	62.27	199	121.06	230	93.51
62.47	168	64.05	156	51.46	62.81	200	122.01	231	94.46
63.10	169	65.00	157	52.32	63.35	201	122.96	232	95.41
63.73	170	65.95	158	53.18	63.89	202	123.91	233	96.36
64.36	171	66.91	159	54.05	64.43	203	124.86	234	97.31
64.99	172	67.86	160	54.93	64.97	204	125.81	235	98.26
65.62	173	68.81	161	55.81	65.51	205	126.76	236	99.21
66.25	174	69.76	162	56.70	66.05	206	127.71	237	100.16
66.88	175	70.71	163	57.60	66.59	207	128.66	238	101.11
67.51	176	71.66	164	58.50	67.13	208	129.61	239	102.06
68.14	177	72.61	165	59.41	67.67	209	130.56	240	103.01
68.77	178	73.56	166	60.33	68.21	210	131.51	241	103.96
69.40	179	74.51	167	61.25	68.75	211	132.46	242	104.91
70.03	180	75.46	168	62.18	69.29	212	133.41	243	105.86
70.66	181	76.41	169	63.11	69.83	213	134.36	244	106.81
71.29	182	77.36	170	64.05	70.37	214	135.31	245	107.76
71.92	183	78.31	171	65.00	70.91	215	136.26	246	108.71
72.55	184	79.26	172	65.95	71.45	216	137.21	247	109.66
73.18	185	80.21	173	66.91	71.99	217	138.16	248	110.61
73.81	186	81.16	174	67.86	72.53	218	139.11	249	111.56
74.44	187	82.11	175	68.81	73.07	219	140.06	250	112.51
75.07	188	83.06	176	69.76	73.61	220	141.01	251	113.46
75.70	189	84.01	177	70.71	74.15	221	141.96	252	114.41
76.33	190	84.96	178	71.66	74.69	222	142.91	253	115.36
76.96	191	85.91	179	72.61	75.23	223	143.86	254	116.31
77.59	192	86.86	180	73.56	75.77	224	144.81	255	117.26
78.22	193	87.81	181	74.51	76.31	225	145.76	256	118.21
78.85	194	88.76	182	75.46	76.85	226	146.71	257	119.16
79.48	195	89.71	183	76.41	77.39	227	147.66	258	120.11
80.11	196	90.66	184	77.36	77.93	228	148.61	259	121.06
80.74	197	91.61	185	78.31	78.47	229	149.56	260	122.01
81.37	198	92.56	186	79.26	79.01	230	150.51	261	122.96
82.00	199	93.51	187	80.21	79.55	231	151.46	262	123.91
82.63	200	94.46	188	81.16	80.09	232	152.41	263	124.86
83.26	201	95.41	189	82.11	80.63	233	153.36	264	125.81
83.89	202	96.36	190	83.06	81.17	234	154.31	265	126.76
84.52	203	97.31	191	84.01	81.71	235	155.26	266	127.71
85.15	204	98.26	192	84.96	82.25	236	156.21	267	128.66
85.78	205	99.21	193	85.91	82.79	237	157.16	268	129.61
86.41	206	100.16	194	86.86	83.33	238	158.11	269	130.56
87.04	207	101.11	195	87.81	83.87	239	159.06	270	131.51
87.67	208	102.06	196	88.76	84.41	240	160.01	271	132.46
88.30	209	103.01	197	89.71	84.95	241	160.96	272	133.41
88.93	210	103.96	198	90.66	85.49	242	161.91	273	134.36
89.56	211	104.91	199	91.61	86.03	243	162.86	274	135.31
90.19	212	105.86	200	92.56	86.57	244	163.81	275	136.26
90.82	213	106.81	201	93.51	87.11	245	164.76	276	137.21
91.45	214	107.76	202	94.46	87.65	246	165.71	277	138.16
92.08	215	108.71	203	95.41	88.19	247	166.66	278	139.11
92.71	216	109.66	204	96.36	88.73	248	167.61	279	140.06
93.34	217	110.61	205	97.31	89.27	249	168.56	280	141.01
93.97	218	111.56	206	98.26	89.81	250	169.51	281	141.96
94.60	219	112.51	207	99.21	90.35	251	170.46	282	142.91
95.23	220	113.46	208	100.16	90.89	252	171.41	283	143.86
95.86	221	114.41	209	101.11	91.43	253	172.36	284	144.81
96.49	222	115.36	210	10					

relative humidity of a place being known, the actual humidity, i. e., the per cent of saturation. Where relative humidity is approximately determined by the latter humidity, i. e., the per cent of saturation. The absolute humidity of a place by the proper weight at saturation given above.

STATIONS.		WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	Mean cloudiness, per cent. of time the sky was cloudy, 1883.	Mean relative humidity, per cent. of saturation, 1883.	Mean absolute humidity, in tenths of a grain of vapor to the cubic foot of air, 1883.	Mean seasonal temperature for 1883, used in rating climates to get accompanying seasonal color plates.
Albany.....	N. Y.	Dec., '75	51	63	53	72
Alpena.....	Mich.	Sept., '72	50	75	44	61
Apache, Ft.....	Ariz.	Oct., '77	47	50	38	70
Assinaboine, Ft.....	Mont.	Oct., '79	32	50	32	65
Atlanta.....	Ga.	Sept., '78	57	68	67	77
Atlantic City.....	N. J.	Dec., '73	48	80	64	70
Augusta.....	Ga.	Nov., '70	56	68	75	81
Baltimore.....	Md.	Jan., '71	52	66	61	75
Barnegat City.....	N. J.	Dec., '73	50	81	66	70
Bennett, Ft.....	Dak.	Dec., '79	46	68	50	69
Benton, Ft.....	Mont.	Dec., '79	34	40	34	68
Bismarek.....	Dak.	Sept., '74	40	66	45	66
Black Island.....	R. I.	Sept., '80	37	84	60	67
Boise City.....	Idaho	July, '77	20	41	34	70
Bozeman.....	Mont.	Sept., '79	34	66	44	66
Burlington.....	Vt.	Sept., '77	42	76	39	69
Butte.....	Mont.	Sept., '79	33	72	55	69
Camden.....	N. J.	Sept., '71	55	69	63	74
Chattanooga.....	Tenn.	May, '71	58	62	59	76
Charleston.....	S. C.	Aug., '78	51	74	44	61
Chicago.....	Ill.	May, '78	59	82	84	78
Cincinnati.....	Ohio	May, '82	39	42	24	61
Cleveland.....	Ohio	May, '71	49	69	39	60
Columbus.....	Ohio	Feb., '71	47	72	75	78
Dayton.....	Ohio	Nov., '70	54	73	49	65
Des Moines.....	Iowa	Nov., '70	55	74	86	82
Detroit.....	Mich.	Nov., '70	55	74	86	82
Duluth.....	Mich.	Nov., '70	55	69	76	81
El Paso.....	Tex.	Jan., '81	4	68	44	64
Elgin.....	Ill.	Jan., '81	4	68	44	64
Empire.....	N. Y.	Jan., '81	4	68	44	64
Evansville.....	Ind.	Jan., '81	4	68	44	64
Galveston.....	Tex.	Jan., '81	4	68	44	64
Georgetown.....	S. C.	Jan., '81	4	68	44	64
Grand Rapids.....	Mich.	Jan., '81	4	68	44	64
Greenville.....	S. C.	Jan., '81	4	68	44	64
Hartford.....	Conn.	Jan., '81	4	68	44	64
Houston.....	Tex.	Jan., '81	4	68	44	64
Indianapolis.....	Ind.	Jan., '81	4	68	44	64
Jackson.....	Miss.	Jan., '81	4	68	44	64
Jacksonville.....	Fla.	Jan., '81	4	68	44	64
Jefferson.....	Mo.	Jan., '81	4	68	44	64
Johnstown.....	Pa.	Jan., '81	4	68	44	64
Kansas City.....	Mo.	Jan., '81	4	68	44	64
Kearney.....	Nebr.	Jan., '81	4	68	44	64
Knox.....	Tenn.	Jan., '81	4	68	44	64
Lafayette.....	La.	Jan., '81	4	68	44	64
Lancaster.....	Pa.	Jan., '81	4	68	44	64
Laredo.....	Tex.	Jan., '81	4	68	44	64
Leavenworth.....	Kan.	Jan., '81	4	68	44	64
Lehigh.....	Pa.	Jan., '81	4	68	44	64
Lexington.....	Ky.	Jan., '81	4	68	44	64
Lewiston.....	Idaho	July, '79	29	42	34	72
Little Rock.....	Ark.	July, '79	45	76	39	78
Los Angeles.....	Cal.	July, '77	33	72	55	69
Louisville.....	Ky.	Sept., '71	55	69	63	74
Lynchburg.....	Va.	May, '71	58	62	59	76
Mackinac City.....	Mich.	Aug., '78	51	74	44	61
Macon, Fort.....	N. C.	May, '78	59	82	84	78
Madison, Wis.....	Wis.	May, '82	39	42	24	61
Marquette.....	Mich.	May, '71	49	69	39	60
Memphis.....	Tenn.	Feb., '71	47	72	75	78
Milwaukee.....	Wis.	Nov., '70	54	73	49	65
Mobile.....	Ala.	Nov., '70	55	74	86	82
Montgomery.....	Ala.	Nov., '70	55	69	76	81
Moorhead.....	Minn.	Jan., '81	4	68	44	64







CLIMATE.

MOISTURE.....	Extreme.....	2d half.
	1st .....	1st .....
	Moderate.....	2d .....
DRYNESS.....	Moderate.....	1st .....
	1st .....	2d .....
	Extreme.....	1st .....





## THE SEASONAL CHARTS.

## STATISTICS FOR AUTUMN.

TABLE GIVING MEAN CLOUDINESS, MEAN RELATIVE HUMIDITY, MEAN ABSOLUTE HUMIDITY AND MEAN TEMPERATURE FOR 1883; THE STATISTICS USED IN DETERMINING THE COLORS AND SHADES IN THE ACCOMPANYING MOISTURE AND DRYNESS CHART FOR AUTUMN.

STATIONS.												STATIONS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
WHEN SIGNAL STATIONS WERE ESTABLISHED.						WHEN SIGNAL STATIONS WERE ESTABLISHED.						MEAN CLOUDINESS, PER CENT. OF TIME THE SKY WAS CLOUDY, 1883.						MEAN CLOUDINESS, PER CENT. OF TIME THE SKY WAS CLOUDY, 1883.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Dec., '73	N. Y.	Sept., '72	Mich.	Oct., '77	Ariz.	Oct., '79	Mont.	Sept., '78	Ga.	Dec., '73	N. J.	Nov., '70	Ga.	Jan., '71	Md.	Dec., '73	N. J.	Dec., '79	Dak.	Dec., '79	Mont.	Sept., '74	Dak.	Nov., '70	Idaho	July, '77	Idaho	July, '79	Idaho	July, '79	Ark.	July, '77	Cal.	Sept., '71	Ky.	May, '71	Va.	Aug., '82	Mich.	May, '78	N. C.	July, '82	Mont.	May, '71	Mich.	Feb., '71	Tenn.	Nov., '70	Wis.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	Nov., '70	Ala.	

Cincinnati	Ohio	Nov., '70	49	69	37	58	Pittsburgh	Pa.	Nov., '70	24	43	16	49
Cleveland	Ohio	Nov., '70	54	67	29	51	Port Huron	Mich.	July, '74	46	70	34	55
Columbus	Ohio	July, '78	50	68	31	53	Portland	Me.	Jan., '71	56	78	27	47
Concho, Fort	Texas	Oct., '75	40	71	46	64	Portland	Ore.	Nov., '71	50	70	30	50
Custer, Fort	Mont.	Dec., '78	46	57	20	45	Prescott	Ariz.	Nov., '73	54	80	35	53
Davenport	Iowa	May, '71	51	68	29	51	Provincetown	Mass.	Feb., '82	20	47	20	52
Davis, Fort	Texas	Dec., '77	26	57	39	60	Pueblo	Nev.	July, '77	59	75	32	51
Dayton	W. T.	July, '79	44	65	25	50	Red Bluff	Cal.	July, '77	32	56	30	61
Deadwood	Dak.	Nov., '78	36	73	23	43	Rio Grande City	Texas	May, '75	48	68	51	73
Del. Breakwater	Del.	Jan., '80	46	80	42	58	Rochester	N. Y.	Nov., '70	56	72	30	50
Denver	Col.	Nov., '71	20	50	19	50	Roseburg	Ore.	July, '77	53	76	33	52
Des Moines	Iowa	Aug., '78	51	68	27	49	Sacramento	Cal	July, '77	24	69	39	61
Detroit	Mich.	Nov., '70	54	72	31	51	Saint Louis	Mo	Nov., '70	45	71	37	57
Dodge City	Kan.	Sept., '74	34	66	25	52	Saint Paul	Minn.	Nov., '70	56	68	23	45
Dubuque	Iowa	July, '73	53	65	29	52	Saint Vincent	Minn.	Sept., '80	51	80	19	35
Duluth	Minn.	Nov., '70	65	74	23	43	Salt Lake City	Utah	Mar., '74	43	49	21	51
Eagle Rock	Idaho	Dec., '80	31	62	16	40	San Diego	Cal.	Nov., '71	26	69	44	63
Eastport	Me.	Apr., '73	51	73	29	46	Sandusky	Ohio	Aug., '77	51	72	36	54
Elliott, Fort	Texas	Nov., '79	27	63	30	56	Sandy Hook	N. J.	Dec., '73	52	73	35	55
El Paso	Texas	Nov., '77	20	54	30	61	San Francisco	Cal.	Mar., '71	35	79	41	58
Erie	Pa.	May, '73	55	74	32	52	Savannah	Ga.	Jan., '71	23	50	15	48
Escanaba	Mich.	May, '81	62	75	24	43	Shaw, Fort	Mont.	Apr., '80	41	74	55	68
Fort Smith	Ark.	June, '82	44	67	41	62	Shreveport	La	Sept., '71	46	66	18	40
Galveston	Texas	Apr., '71	46	74	67	74	Sill, Fort	Ind. T.	June, '75	49	72	52	65
Grand Haven	Mich.	May, '71	52	77	30	48	Smithville	N. C.	Oct., '75	35	64	38	61
Grant, Fort	Ariz.	Nov., '75	24	41	20	60	Spokane Falls	Wash. T.	Feb., '81	45	79	53	65
Hattaras	N. C.	Dec., '80	49	84	57	65	Springfield	Ill.	July, '79	58	71	26	47
Helena	Mont.	Oct., '79	43	66	21	43	Stockton, Fort	Texas	Feb., '76	44	67	30	54
Huron	Dak.	July, '81	47	69	22	44	Sante Fé	N. Mex.	Nov., '71	26	66	39	63
Indianapolis	Ind.	Feb., '71	45	66	31	51	Thomas, Camp	N. Mex.	Sept., '77	23	44	25	61
Indianola	Texas	May, '72	40	80	71	74	Toledo	Ohio	Nov., '70	54	68	30	52
Jacksonville	Fla.	Sept., '71	39	77	64	71	Vicksburg	Miss.	Sept., '71	41	70	52	68
Keokuk	Iowa	July, '71	43	69	30	52	Visalia	Cal.	July, '77	24	66	34	60
Key West	Fla.	Nov., '70	38	78	84	79	Washington	D. C.	Nov., '70	51	74	37	56
Kitty Hawk	N. C.	Jan., '75	48	78	49	63	West Las Animas	N. Cal.	Oct., '81	29	53	20	51
Knoxville	Tenn.	Jan., '71	45	73	42	57	Wilmington	N. C.	Jan., '71	48	76	51	65
La Crosse	Wis.	Oct., '72	56	69	26	47	Winnemucca	Nev.	July, '77	35	53	16	45
La Mesilla	N. Mex.	Nov., '77	28	47	29	60	Yankton	Dak.	Apr., '73	34	70	25	46
Leavenworth	Kan.	May, '71	41	68	31	53	Yuma	Ariz.	Nov., '73	18	43	33	71

The principal Signal Stations, State Capitals, largest cities, health stations and the most prominent thermal and mineral springs in the United States are given in the black plate or bases of these charts. The signal stations, especially, serve as guides for running the isothermal and humidity lines, for the separate data at these one hundred and thirty-six stations. Reference can be made to the statistical tables, as at the same time to the Rating Table, so that, by following the Rule for Determining Moisture and Dryness, (see 16th page) all the colors and lines here given can be tested as to their accuracy.

A fuller explanation may be desired as to the method employed in obtaining the mean of combined humidities, or the average of climate. The mean of 67 for relative humidity was obtained by choosing places on different parallels of latitude, representative of the whole country, and finding their average. The mean of 44% for cloudiness is a little less than the average for all stations for 1883. These means are only claimed to be approximate. The line between the red of dryness and the blue of moisture may apportion a little too much of the country to moisture, but a true line for many years, instead of one, '83, which was some colder than the average, would not vary five per cent. in statistics from the mean as drawn on the seasonal charts.

The daily, monthly and annual ranges of temperature are given in these tables, and are excellent guides as to dry climates, when, as at Los Angeles, Salt Lake and Denver, there are very high daily, compared to the monthly, ranges of temperature. That dryness is indicated by variability of temperature (see author's essay on "Dryness," read before the American Climatological Association, 1884) will be evident to any one who will average the ranges of temperature for the separate belts of color on the seasonal charts. Fifty representative places, thus averaged for the annual means of daily and monthly ranges, give the following results (see table), which show that places of *extreme dryness* are more than two and one-half times as variable in daily temperature as those of *extreme moisture*. Furthermore, for each of the four divisions of climate, from the extreme of dryness to the extreme of moisture, the monthly means regularly *decrease* in variability.

TABLE.

	Means of Daily Ranges.	Monthly Ranges.
Extreme Dryness	..... 39.5° C.	..... 33.5° C.
Moderate Dryness	..... 29.5° C.	..... 23.5° C.
Moderate Moisture	..... 19.5° C.	..... 13.5° C.
Extreme Moisture	..... 9.5° C.	..... 3.5° C.







MOISTURE.....

DRYNESS.....

Extreme.....	{	2d	half.
		1st	"
Moderate .....	{	2d	"
		1st	"
Moderate .....	{	1st	"
		2d	"
Extreme.....	{	1st	"
		2d	"





## THE SEASONAL CHARTS.

## STATISTICS FOR WINTER.

TABLE GIVING MEAN CLOUDINESS, MEAN RELATIVE HUMIDITY, MEAN ABSOLUTE HUMIDITY, AND MEAN TEMPERATURE FOR 1883; THE STATISTICS USED IN DETERMINING THE COLORS AND SHADES

IN THE ACCOMPANYING MOISTURE AND DRYNESS CHART FOR WINTER.

STATIONS.	WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	Mean cloudiness, per cent, of time the sky was cloudy, 1883.	Mean relative humidity, per cent, of saturation, 1883.	Mean absolute humidity, in tenths of a grain of vapor to the cubic foot of air, 1883.	Mean seasonal temperature for 1883, used in rating climates to get accompanying seasonal color plates.	STATIONS.	WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	Mean cloudiness, per cent, of time the sky was cloudy, 1883.	Mean relative humidity, per cent, of saturation, 1883.	Mean absolute humidity, in tenths of a grain of vapor to the cubic foot of air, 1883.	Mean seasonal temperature for 1883, used in rating climates to get accompanying seasonal color plates.
Albany.....	N. Y.	Dec., '73	64	12	28	Lewiston.....	Idaho	July, '79	76	13	28
Alpena.....	Mich.	Sept., '72	74	9	18	Little Rock.....	Ark.	July, '79	79	24	43
Apache, Fort.....	Ariz.	Oct., '77	65	17	36	Los Angeles.....	Cal.	July, '77	77	27	54
Assinaboine, Fort.....	Mont.	Oct., '79	48	6	12	Louisville.....	Ky.	Sept., '71	69	18	37
Atlanta.....	Ga.	Sept., '78	63	26	44	Lynchburg.....	Va.	May, '71	61	18	38
Atlantic City.....	N. J.	Dec., '74	75	15	33	Mackinac City.....	Mich.	Aug., '82	70	72	9
Augusta.....	Ga.	Nov., '70	58	32	50	Macon, Fort.....	N. C.	May, '78	56	31	46
Baltimore.....	Md.	Jan., '71	69	17	36	Maginnis, Fort.....	Mont.	July, '82	51	6	20
Barneget City.....	N. J.	Dec., '73	79	15	33	Marquette.....	Mich.	May, '71	67	7	17
Bennet, Fort.....	Dak.	Dec., '79	47	7	14	Memphis.....	Tenn.	Feb., '71	63	24	41
Benton, Fort.....	Mont.	Dec., '79	50	65	7	Milwaukee.....	Wis.	Nov., '70	59	8	19
Bismarck.....	Dak.	Sept., '74	41	5	6	Mobile.....	Ala.	Nov., '70	72	38	51
Block Island.....	R. I.	Sept., '80	49	16	32	Montgomery.....	Ala.	Nov., '70	73	33	51
Boise City.....	Idaho	July, '77	69	14	32	Moorthed.....	Minn.	Jan., '81	88	4	0
Boston.....	Mass.	Nov., '70	51	13	28	Mount Washington.....	N. H.	Dec., '70	50	6	4
Brownsville.....	Texas	Aug., '75	72	13	28	Nashville.....	Tenn.	Nov., '70	70	24	40
Buffalo.....	N. Y.	Nov., '70	80	44	58	New Haven.....	Conn.	Dec., '72	75	10	27
Buford, Fort.....	Dak.	Oct., '78	81	24	24	New London.....	Conn.	Dec., '72	71	12	29
Cairo.....	Ill.	June, '71	44	5	5	New Orleans.....	La.	Jan., '71	51	12	29
Cape Henry.....	Va.	Dec., '73	77	20	36	New York.....	N. Y.	Nov., '70	70	41	58
Cape May.....	N. J.	May, '71	80	25	40	Norfolk.....	Va.	Jan., '71	77	20	30
Cape Mendocino.....	Cal.	July, '82	76	17	37	North Platte.....	Neb.	Nov., '70	74	24	42
Cedar Keys.....	Fla.	Nov., '79	80	16	46	Olympia.....	Wash.	Sept., '74	77	10	29
Charleston.....	S. C.	Jan., '71	77	50	60	Omaha.....	Neb.	July, '77	44	21	37
Charlotte.....	N. C.	Jan., '71	81	39	52	Oswego.....	N. Y.	Nov., '70	66	9	19
Chattanooga.....	Tenn.	Oct., '78	75	25	42	Palestine.....	Texas	Nov., '70	70	11	26
Cheyenne.....	Wyo.	Nov., '70	71	25	43	Pensacola.....	Fla.	Dec., '81	68	27	47
			48	8	23			Oct., '79	78	40	55

Chicago	Ill.	Nov., '70	53	72	10	22	Philadelphia	Pa.	Jan., '71	54	71	17	34
Chincoteague	Va.	Feb., '80	55	79	18	31	Pike's Peak	Col.	Nov., '73	33	81	5	8
Cincinnati	Ohio	Nov., '70	72	78	20	35	Pioche	Nev.	Nov., '70	34	55	10	31
Cleveland	Ohio	Nov., '70	71	81	13	26	Pittsburgh	Pa.	July, '74	72	76	17	32
Columbus	Ohio	July, '78	73	71	15	31	Fort Huron	Mich.	Jan., '71	72	80	11	21
Concho, Fort	Texas	Oct., '75	48	64	22	43	Portland	Me.	Nov., '71	54	67	11	25
Custer, Fort	Mont.	Dec., '78	50	70	10	21	Portland	Ore.	Nov., '73	74	79	21	39
Davenport	Iowa	May, '71	57	60	9	23	Prescott	Ariz.	Feb., '82	27	58	15	37
Davis, Fort	Texas	Dec., '77	34	51	16	43	Provincetown	Mass.	July, '77	60	75	15	30
Dayton	W. T.	July, '73	63	80	13	27	Red Bluff	Cal.	July, '77	41	70	22	45
Deadwood	Dak.	Nov., '78	41	81	10	30	Rio Grande City	Texas	May, '75	55	69	47	61
Delaware Breakwater	Del.	Jan., '80	61	81	20	35	Rochester	N. Y.	Nov., '70	78	79	13	26
Denver	Col.	Nov., '71	25	57	10	29	Roseburg	Ore.	July, '77	71	79	22	40
Des Moines	Iowa	Aug., '78	56	66	8	17	Sacramento	Cal.	July, '77	36	78	26	45
Detroit	Mich.	Nov., '70	68	78	13	26	Saint Louis	Mo.	Nov., '70	62	85	16	29
Dodge City	Kan.	Sept., '74	48	65	11	27	Saint Paul	Minn.	Nov., '70	54	77	6	10
Dubuque	Iowa	July, '73	53	61	7	17	Saint Vincent	Minn.	Sept., '80	49	89	3	3
Duluth	Minn.	Nov., '70	69	74	6	10	Salt Lake City	Utah	Nov., '71	53	56	10	28
Eagle Rock	Idaho	Dec., '80	44	74	8	17	San Diego	Cal.	Nov., '71	34	62	29	54
Eastport	Me.	April, '78	57	75	9	20	Sandusky	Ohio	Aug., '77	69	76	17	31
Elliot, Fort	Texas	Nov., '79	30	57	13	31	Sandy Hook	N. J.	Dec., '73	51	80	17	31
El Paso	Texas	Nov., '77	28	50	17	45	San Francisco	Cal.	Feb., '71	39	75	29	48
Erie	Pa.	May, '78	78	78	13	27	Santa Fé	N. Mex.	Jan., '71	31	52	11	30
Escanaba	Mich.	May, '81	71	77	7	15	Savannah	Ga.	April, '80	51	69	36	55
Fort Smith	Ark.	June, '82	54	72	19	38	Shaw, Ft.	Mont.	Sept., '71	46	64	8	21
Galveston	Texas	April, '71	58	82	41	54	Shreveport	La.	June, '75	60	73	29	49
Grand Haven	Mich.	May, '71	72	82	13	24	Sill, Ft.	Ind. T.	Oct., '75	47	65	18	39
Grant, Fort	Ariz.	Nov., '75	32	56	18	34	Smithville	N. C.	Feb., '81	50	82	33	47
Hatteras	N. C.	Dec., '80	55	85	31	45	Spokane Falls	Wash. T.	July, '79	72	83	13	26
Helena	Mont.	Oct., '79	84	84	10	20	Springfield	Ill.	Feb., '76	58	70	14	27
Huron	Dak.	July, '81	49	70	6	11	Stockton, Fort	Texas	Nov., '71	41	59	19	43
Indianapolis	Ind.	Feb., '71	62	73	14	29	Thomas, Camp	Ariz.	Sept., '77	34	70	22	43
Indianola	Texas	May, '72	57	82	39	54	Toledo	Ohio	Nov., '70	67	71	13	27
Jacksonville	Fla.	Sept., '71	41	77	45	59	Vicksburg	Miss.	Sept., '71	60	70	30	50
Keokuk	Iowa	July, '71	52	74	11	23	Visalia	Cal.	July, '77	35	70	24	45
Key West	Fla.	Nov., '70	36	82	71	72	Washington	D. C.	Nov., '70	54	75	18	34
Kitty Hawk	N. C.	Jan., '75	55	79	26	43	West Las Animas	Col.	Oct., '81	37	61	9	24
Knoxville	Tenn.	Jan., '71	62	78	22	40	Wilmington	N. C.	Jan., '71	57	76	32	49
La Crosse	Wis.	Oct., '72	54	72	8	14	Winnebucca	Nev.	July, '77	47	65	12	28
La Messilla	N. Mex.	Nov., '77	37	49	16	43	Yankton	Dak.	April, '73	43	65	8	14
Leavenworth	Kan.	May, '71	55	73	12	26	Yuma	Ariz.	Nov., '73	24	47	22	55

It is to be explained that barometrical records, atmospheric electricity and ozone are not given for the following reasons: the confusion incident to the fickleness of barometrical readings, and the necessity to reduce them to a sea level standard, is not thought to be warranted by any good that would result; while atmospheric electricity and ozone are not yet estimated, if at all, with sufficient degree of accuracy to allow of their use.

It will be instructive to notice the influence of prevailing winds upon the humidity of certain sections. It will be noticed on the Winter Chart how very generally the arrows, indicating the prevailing direction, fly toward the deep blue shades of extreme moisture. For instance, in the extreme northwest of the United States the prevailing winds are either from the southwest or south. The warm moist air from the Pacific Ocean is condensed, as to its humidity, on reaching the cold land, and a Winter precipitation of 31 inches occurs at Olympia as compared with a rainfall of 3 inches in Summer. (See statistical tables.).

Again, over the regions of the great interior lakes and Ohio river basin the usual condensation of moisture, due to the decreasing temperature in Winter (see Combined Humidity Chart, page 30), is increased by the fact that most of the storms for this section originate in the far northwest. As the Winter wind arrows show (see Winter Chart, page 46), the prevailing winds blow down the great Mis-souri valley, i.e., southeast; and when this moist section is reached, the prevailing winds and the rain-bearing wind arrows fly together toward the great lakes. A condensation of moisture thus occurs that is represented by a remarkable cloudiness of seventy-eight per cent. of the time at Oswego, Rochester, Erie, Alpena and Marquette. (See Statistics for Winter.) Per contra, the Winter prevailing winds for Yuma, San Diego and Los Angeles are from the dry and elevated interior (which has no surplus moisture from which storms can be originated), and through their agency the extremely dry atmosphere (darkest red) of the interior is brought down almost to the Pacific Coast.



# THE SEASONAL CHART, SHOWING COMBINED ATMOSPHERIC HUMIDITIES FOR WINTER.



CLIMATE.

MOISTURE.....	Extreme.....	2d half.
	1st .....	1st ..
	Moderate .....	2d ..
DRYNESS.....	Moderate .....	1st ..
	2d .....	2d ..
	Extreme.....	1st ..





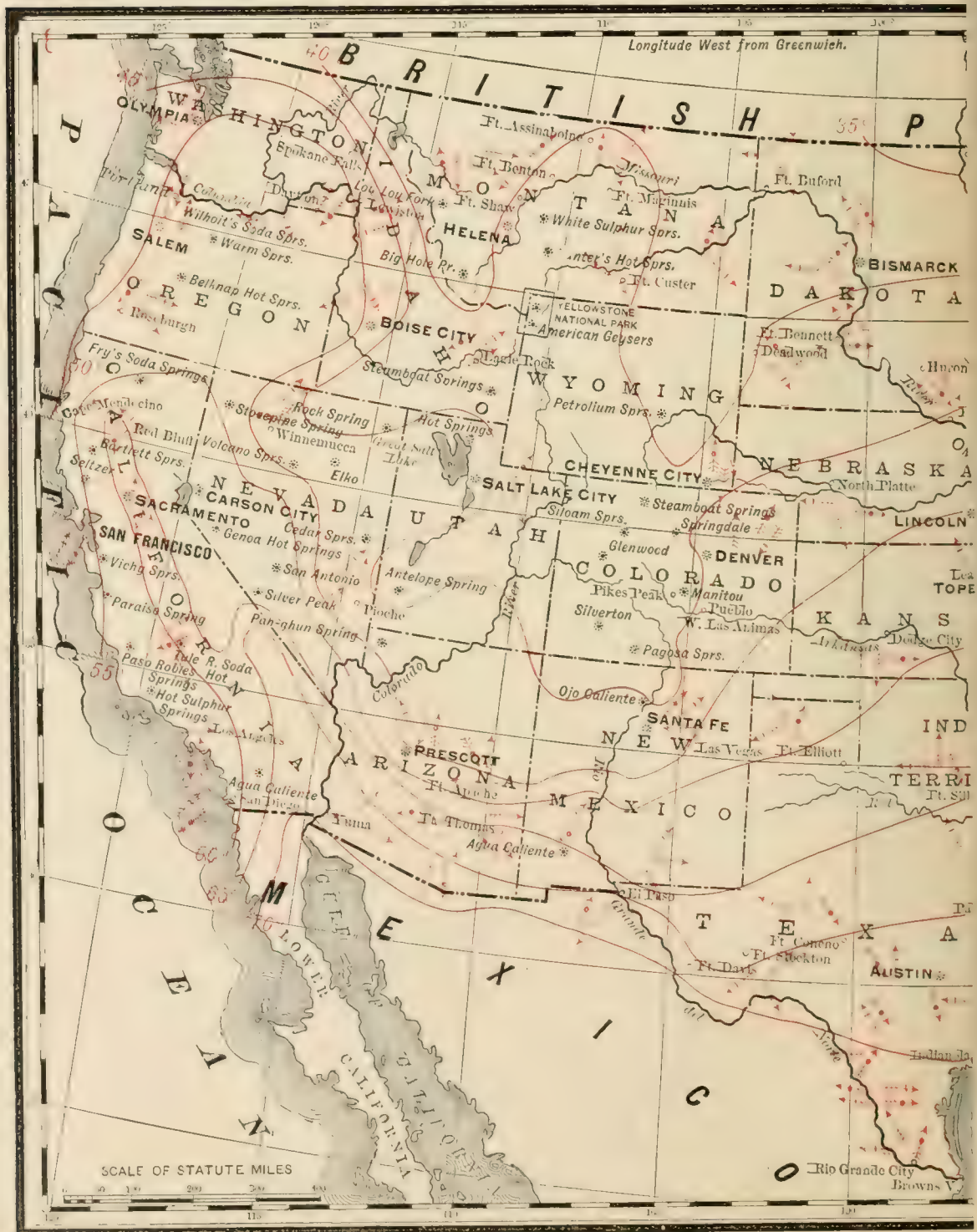


Boise City	Idaho	July, '77	4956	121	3	23	51	Moorehead	Minn.	Jan., '81	9223	18	7	21	61
Boston	Mass.	Nov., '70	7366	48	12	18	51	Mount Washington	N. H.	Dec., '70	3606	124	20	14	50
Brownsville	Texas	Aug., '75	6042	82	5	15	41	Nashville	Tenn.	Nov., '70	6333	71	13	19	48
Buffalo	N. Y.	Nov., '70	6586	63	8	14	49	New Haven	Conn.	Dec., '72	6074	81	12	15	42
Buford, Fort	Dak.	Oct., '78	6913	57	4	24	51	New London	Conn.	Jan., '71	5886	84	18	13	32
Cafo	Ill.	June, '73	6457	67	13	15	48	New Orleans	La.	Nov., '70	7265	52	10	15	47
Cape Henry	Va.	Dec., '73	9870	13	15	15	47	New York	N. Y.	Nov., '70	6475	66	12	17	48
Cape May	N. J.	May, '71	10693	6	11	14	37	Norfolk	Va.	Jan., '71	9848	14	5	23	61
Cape Mendocino	Cal.	July, '82			6	12	29	North Platte	Neb.	Sept., '74	3171	128	13	18	42
Cedar Keys	Fla.	Nov., '79	7679	39	9	13	31	Olympia	Wash.	July, '77	7660	42	10	18	59
Charleston	S. C.	Jan., '71	6430	70	14	15	40	Omaha	Neb.	Nov., '70	6507	65	8	14	48
Charlotte	N. C.	Jan., '79	4438	117	12	19	48	Oswego	N. Y.	Dec., '70	4759	109	13	18	42
Chattanooga	Tenn.	Oct., '78	5012	93	16	19	48	Palestine	Texas	Nov., '71	6441	69	13	14	36
Cheyenne	Wyo.	Nov., '70	8524	21	4	24	61	Pensacola	Fla.	Oct., '79	8063	27	9	15	48
Chicago	Ill.	Nov., '70	6874	59	10	14	51	Philadelphia	Pa.	Jan., '71	16755	1	10	14	43
Chicotague	Va.	Mar., '80	10392	10	8	14	43	Pike's Peak	Col.	Nov., '73	5962	86	2	23	53
Cincinnati	Ohio	Nov., '70	4921	103	11	16	49	Pioche	Nev.	Nov., '70	4811	167	8	20	58
Cleveland	Ohio	Nov., '70	6944	56	9	15	53	Pittsburg	Pa.	July, '74	7713	36	10	15	53
Columbus	Ohio	July, '78	6189	77	11	17	52	Portland	Me.	Jan., '71	6320	72	9	15	43
Concho, Fort	Texas	Oct., '78	6248	74	5	24	64	Portland	Me.	Nov., '73	3601	125	13	18	40
Custer, Fort	Mont.	Dec., '78	7362	49	10	19	52	Prescott	Ariz.	Feb., '82	5789	88	2	34	61
Davenport	Iowa	May, '71	74601	112	2	30	53	Provincetown	Mass.	July, '77	8221	26	12	13	41
Davis, Fort	Texas	Dec., '77	4601	122	7	24	58	Red Bluff	Cal.	July, '77	5425	95	7	23	49
Dayton	W. T.	July, '79	2841	130	13	19	57	Rio Grande City	Texas	May, '75	6614	61	5	21	52
Deadwood	Dak.	Nov., '78	12455	98	6	23	62	Rochester	N. Y.	Nov., '70	7757	34	9	15	52
Delaware Breakwater	Del.	Jan., '80	5258	91	11	18	60	Rosburg	Ore.	July, '77	2590	133	9	31	44
Denver	Col.	Nov., '71	5707	73	9	14	51	Sacramento	Cal.	July, '77	5376	97	8	20	42
Des Moines	Iowa	Aug., '78	10567	8	6	24	64	Saint Louis	Mo.	Nov., '70	7845	32	10	19	52
Detroit	Mich.	Nov., '70	4803	108	9	20	56	Saint Paul	Minn.	Nov., '70	6953	54	7	19	56
Dodge City	Kan.	Sept., '74	7773	89	8	15	54	Saint Vincent	Cal.	Sept., '80	7432	45	4	20	64
Dubuque	Iowa	July, '73	7881	29	5	24	53	Salt Lake City	Utah	Mar., '74	4596	114	6	19	47
Duluth	Minn.	Nov., '70	7759	33	13	13	38	San Diego	Cal.	Nov., '71	4831	106	1	15	31
Eagle Rock	Idaho	Dec., '80	10167	12	5	25	62	Sandusky	Ohio	Aug., '77	10257	11	9	14	48
Eastport	Me.	Apr., '73	7759	33	13	13	38	Sandy Hook	N. J.	Dec., '73	10592	7	14	14	46
Elliott, Fort	Texas	Nov., '77	4721	110	1	35	57	San Francisco	Cal.	Mar., '71	7409	46	5	11	28
El Paso	Texas	Nov., '77	7660	41	9	14	53	Sante Fé	N. Mex.	Jan., '71	6213	76	2	24	54
Erie	Pa.	May, '73	7386	47	8	16	53	Savannah	Ga.	Apr., '80	5677	92	12	16	40
Escanaba	Mich.	May, '81	116	116	11	24	51	Shaw, Fort	Mont.	Sept., '70	7503	44	3	24	69
Fort Smith	Ark.	June, '82	4456	43	10	9	31	Shreveport	La.	June, '75	4374	120	15	20	45
Galveston	Texas	Apr., '71	7550	43	10	9	31	Sil, Fort	Ind. T.	Oct., '75	9497	17	9	24	54
Grand Haven	Mich.	May, '71	8488	22	9	13	49	Smithville	N. C.	Feb., '81	7698	37	11	14	42
Grant, Fort	Ariz.	Nov., '75	6000	85	2	26	52	Spokane Falls	W. T.	July, '79	4408	118	4	21	51
Hatteras	N. C.	Dec., '80	13038	2	18	13	36	Stockton, Fort	Ill.	Feb., '76	7293	51	13	17	49
Helena	Mont.	Oct., '79	4973	100	3	16	55	Thomas, Camp	Texas	Nov., '71	7725	35	3	33	59
Huron	Dak.	July, '81	9159	19	8	21	64	Toledo	Ariz.	Sept., '77		55	2	34	58
Indianapolis	Ind.	Feb., '71	4916	104	12	18	52	Vicksburg	Miss.	Nov., '70	6945	113	8	15	51
Indianola	Texas	May, '72	10423	9	7	12	38	Visalia	Cal.	Sept., '71	4600	129	3	26	50
Jacksonville	Fla.	Sept., '71	5447	94	10	16	42	Washington	D. C.	Nov., '70	5672	93	10	18	52
Keokuk	Iowa	July, '71	7110	53	10	17	53	West Las Animas	Col.	Oct., '81	8370	23	4	30	61
Key West	Fla.	Nov., '70	7067	40	6	10	23	Winnington	N. C.	Jan., '71	6320	75	12	16	47
Kitty Hawk	N. C.	Jan., '75	11450	15	15	21	36	Winnemucca	Nev.	July, '77	6599	62	3	26	59
Knoxville	Tenn.	Jan., '71	4971	102	15	21	50	Yankton	Dak.	Apr., '73	8232	25	9	20	64
La Crosse	Wis.	Oct., '72	6109	73	7	16	55	Yuma	Ariz.	Nov., '73	4394	119	0	30	50
La Mesilla	N. Mex.	Nov., '77	2833	132	1	38	60								
Leavenworth	Kan.	May, '71	6414	68	11	19	56								



THE CHART ILLUSTRATING  
SEASONAL ISOTHERMS AND WIND INDICATIONS  
FOR SPRING.

Representing a period covering nearly 11 years for temperature lines,  
and 2 years for wind arrows.



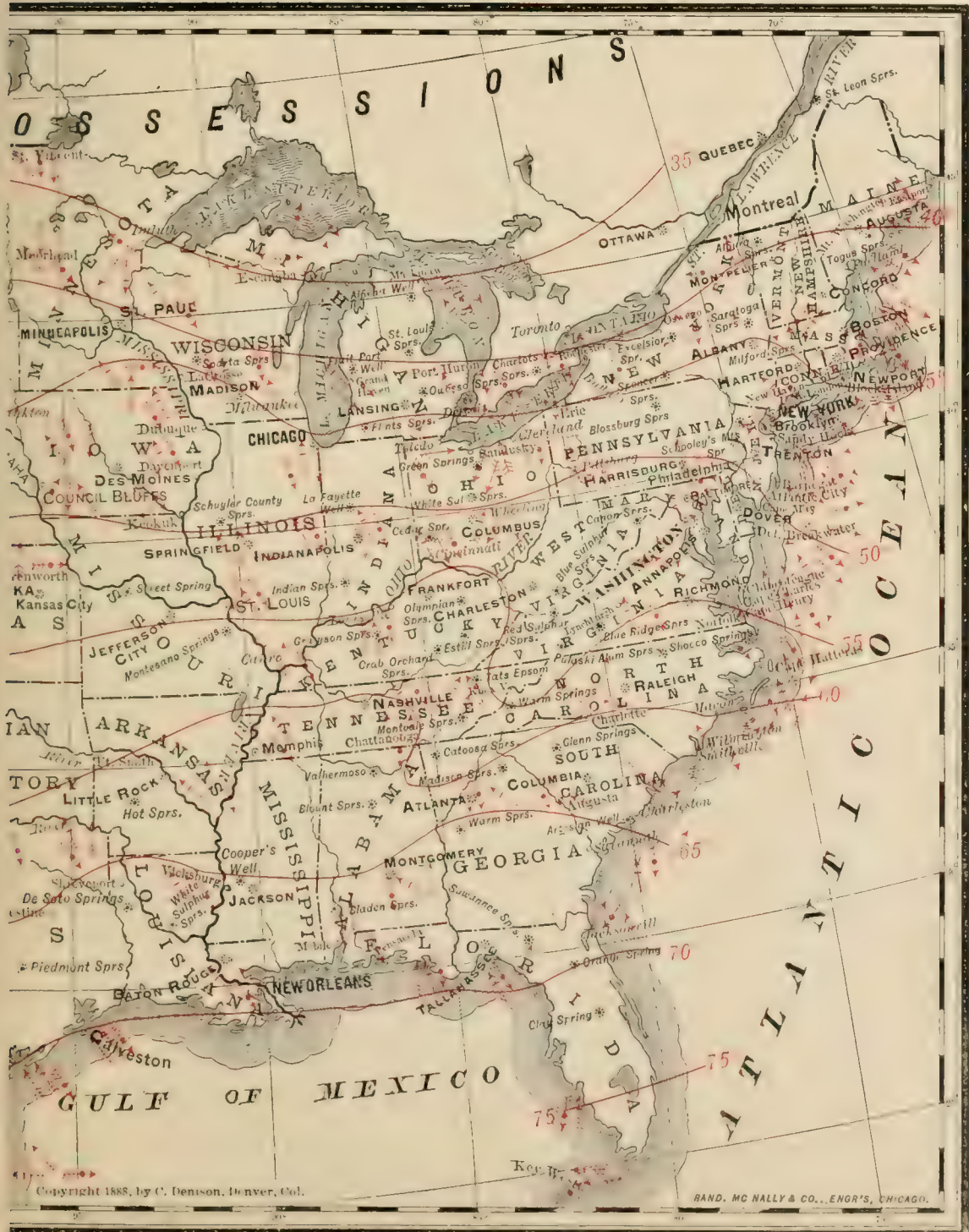
ISOTHERMS.—The average seasonal temperatures since the Signal Service Stations were established (Fahrenheit).

← PREVAILING direction by seasons (since establishment).

RAIN-BEARING WINDS.—Directions (quadrants indicated by arrow's feather) which are most LIKELY to be followed by rain or snow.

PLEASANT WEATHER WINDS.—Directions which are LEAST LIKELY to be followed by rain or snow.

WINDS (blowing as the arrow shows).





# TEMPERATURE, WIND MOVEMENT AND RAINFALL STATISTICS FOR SUMMER.

TABLE GIVING NAMES OF STATIONS, MILES THE WIND TRAVELS, COMPARATIVE WINDINESS, INCHES OF RAIN OR MELTED SNOW, DAILY RANGES OF TEMPERATURE AND MONTHLY RANGES OF TEMPERATURE.

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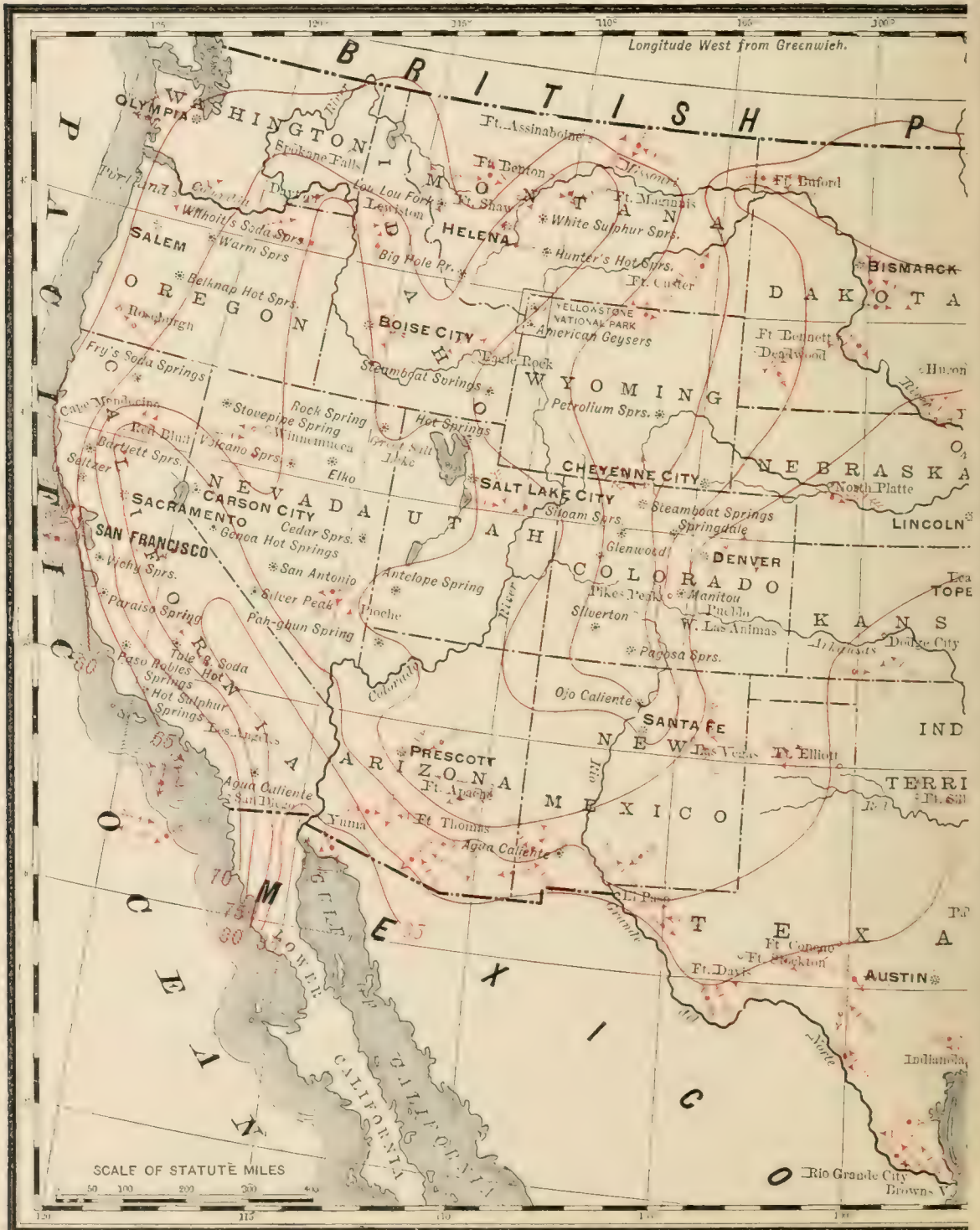
Cedar Keys	Nov., '79	6550	30	25	11	24	Olympia	Wash.	July, '77	2579	128	3	23	46
Charleston	Jan., '71	5670	47	20	15	28	Omaha	Neb.	Nov., '70	5343	62	16	19	42
Charlotte	Jan., '79	5362	110	14	16	36	Oswego	N. Y.	Nov., '70	4515	86	9	16	40
Chattanooga	Oct., '78	5518	54	11	17	35	Palestine	Tenn.	Dec., '81	5360	60	10	19	35
Cheyenne	Nov., '70	6280	33	5	30	52	Pensacola	Fla.	Oct., '79	5388	58	23	12	26
Chicago	Nov., '70	5347	61	11	13	39	Philadelphia	Pa.	Jan., '71	6123	38	13	15	36
Chickadee	Mar., '80	7077	15	11	11	33	Pike's Peak	Colo.	Nov., '73	10576	2	11	14	35
Cincinnati	Nov., '70	3594	111	14	15	36	Pioche	Nev.	Nov., '70	5573	50	2	26	47
Cleveland	Nov., '70	5411	57	12	15	40	Pittsburg	Pa.	July, '74	3693	108	12	20	44
Columbus	July, '78	4354	93	12	16	39	Port Huron	Mich.	Jan., '71	5760	44	10	16	42
Concho, Fort	Oct., '75	6430	32	11	25	44	Portland	Me.	Nov., '71	4692	83	16	17	39
Custer, Fort	Dec., '78	5165	65	4	28	54	Portland	Ore.	Nov., '73	3306	117	3	22	42
Davenport	May, '71	5119	69	13	16	38	Prescott	Ariz.	Feb., '82	4041	100	6	30	53
Davis, Fort	Dec., '77	3536	112	2	24	45	Provincetown	Mass.	July, '77	5835	42	6	18	38
Dayton	July, '79	3717	107	12	30	56	Red Bluff	Cal.	July, '77	4296	95	0	29	50
Deadwood	Nov., '78	3049	122	8	19	52	Rio Grande City	Tenn.	May, '75	6864	26	8	22	37
Delaware Breakwater	Jan., '80	9087	6	9	13	29	Rochester	N. Y.	Nov., '70	5556	52	10	17	42
Denver	Nov., '71	4416	89	5	24	50	Roseburg	Ore.	July, '77	2614	126	2	28	48
Des Moines	Aug., '78	3393	106	16	18	42	Sacramento	Cal.	July, '77	4961	74	0	29	46
Detroit	Nov., '70	4761	78	11	16	40	Saint Louis	Mo.	Nov., '70	5884	41	12	19	37
Dodge City	Sept., '74	9091	5	9	25	49	Saint Paul	Minn.	Nov., '70	5650	48	12	20	43
Dubuque	July, '73	3439	114	14	21	43	Saint Vincent	Minn.	Sept., '80	5740	46	7	24	48
Duluth	Nov., '70	4710	81	13	15	41	Salt Lake City	Utah	Mar., '74	4321	94	2	23	47
Eagle Rock	Dec., '80	7991	11	2	34	56	San Diego	Cal.	Nov., '71	4571	85	0	12	25
Eastport	Apr., '73	4699	82	12	18	35	Sandusky	Ohio	Aug., '77	7984	13	13	13	36
Elliott, Fort	Nov., '79	7474	19	8	23	49	Sandy Hook	N. J.	Dec., '73	8278	10	13	14	36
El Paso	Nov., '77	3410	115	6	32	44	San Francisco	Cal.	Mar., '71	9223	4	0	10	25
Erie	May, '73	5333	63	10	14	37	Santa Fé	N. Mex.	Jan., '71	4968	73	8	25	43
Escanaba	May, '81	6058	16	13	16	43	Savannah	Ga.	Apr., '80	4372	92	19	15	29
Fort Smith	June, '82	2853	125	7	23	39	Shaw, Fort	Mont.	Sept., '71	5580	49	5	30	55
Galveston	Apr., '71	5751	45	13	10	21	Shreveport	La.	June, '75	8032	123	9	20	33
Grand Haven	May, '71	6271	34	11	12	38	Sill, Fort	Ind. T.	Oct., '75	7426	21	4	22	42
Grant, Fort	Nov., '75	5112	67	9	22	40	Smithville	N. C.	Feb., '81	7404	23	15	13	34
Hatteras	Dec., '80	11083	1	17	11	27	Spokane Falls	Wash. T.	July, '79	3963	103	2	29	55
Helena	Oct., '79	4450	88	4	20	50	Springfield	Ill.	Feb., '76	5063	71	12	16	41
Huron	July, '81	7051	25	13	24	47	Stockton, Fort	Texas	Nov., '71	7990	12	7	27	46
Indianapolis	Feb., '71	3403	116	15	17	39	Thomas, Camp	Ariz.	Sept., '77	-----	-----	5	29	50
Indianaola	May, '72	7841	14	9	13	26	Toledo	Ohio	Nov., '70	5238	64	11	15	40
Jacksonville	Sept., '71	4751	80	18	14	29	Vicksburg	Miss	Sept., '71	3010	124	11	18	32
Keokuk	July, '71	4928	75	13	16	40	Visalia	Cal.	July, '77	2566	129	0	34	52
Key West	Nov., '70	5487	55	14	18	40	Washington	D. C.	Nov., '70	3961	104	13	19	40
Kitty Hawk	Jan., '75	9246	3	20	13	34	West Las Animas	Col.	Oct., '81	6163	37	5	29	51
Knoxville	Jan., '71	3526	113	13	18	36	Wilmington	N. C.	Jan., '71	4813	77	20	14	33
La Crosse	Oct., '72	4820	76	14	15	41	Winemucca	Nev.	July, '77	6810	27	1	35	61
La Messilla	Nov., '77	1440	133	3	33	49	Yankton	Dak.	Apr., '73	5856	43	12	22	47
Leavenworth	May, '71	4397	90	14	19	41	Yuma	Ariz.	Nov., '73	4045	99	1	29	45

These isothermal lines furnish interesting and quite conclusive proof that the sea and inferentially atmospheric moisture is the great equalizer of temperature. This is made apparent by a comparison of the directions the seasonal temperature lines take when they are projected eastwardly from the Pacific Coast. Compare the Summer and Winter Temperature Charts. The land both absorbs and radiates heat more rapidly than does water. So it is correspondingly colder in Winter and warmer in Summer. The great effect in the divergence of the eastward bound Summer isotherms to the north and the Winter isotherms to the south is strikingly represented by this seasonal method of illustration. Conversely, the dryer the land and the farther it is removed from the influence of the sea (inland elevations) the more variable are the variations in temperature, especially the daily range.



# THE CHART ILLUSTRATING SEASONAL ISOOTHERMS AND WIND INDICATIONS FOR SUMMER.

Representing a period covering nearly 11 years for temperature lines,  
and 2 years for wind arrows.



**ISOTHERMS.**—The average seasonal temperatures since the Signal Service Stations were established (Fahrenheit).

← PREVAILING direction by seasons (since establishment).

**RAIN-BEARING WINDS.**--Directions (quadrants indicated by arrow's feather) which are MOST LIKELY to be followed by rain or snow.

PLEASANT WEATHER WINDS.—Directions which are LEAST  
LIKELY to be followed by rain or snow.

WINDS (blowing as the arrows fly).





# THE SEASONAL CHARTS.

## TEMPERATURE, WIND MOVEMENT AND RAINFALL STATISTICS FOR AUTUMN.

TABLE GIVING NAMES OF STATIONS, MILES THE WIND TRAVELS, COMPARATIVE WINDINESS, INCHES OF RAIN OR MELTED SNOW, DAILY RANGES OF TEMPERATURE AND MONTHLY RANGES OF TEMPERATURE.

STATIONS.		WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	Monthly wind movement in miles from commencement to January, 1884.	Comparative windiness, 1 to 1884.	Mean rain and melted snow, in inches, from commencement of observations to January, 1884.	Mean daily range of tempera- ture, 1883.	Means of monthly ranges of temperature, Fahr., from commencement of observa- tions to January, 1884.	STATIONS.		WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	Monthly wind movement in miles from commencement to January, 1884.	Comparative windiness, 1 to 1884.	Mean rain and melted snow, in inches, from commencement of observations to January, 1884.	Mean daily range of tempera- ture, 1883.	Means of monthly ranges of temperature, Fahr., from commencement of observa- tions to January, 1884.
Albany.....	N. Y.	Dec., '73	4397	94	9	14	47	Lewiston.....	Idaho	July, '79	1743	133	4	17	45
Alpena.....	Mich.	Sept., '72	6354	50	12	14	47	Little Rock.....	Ark.	July, '79	3595	115	12	15	46
Apache, Fort.....	Ariz.	Oct., '77	4401	93	5	38	57	Los Angeles.....	Cal.	July, '77	3180	119	2	26	47
Assinaboine, Fort.....	Mont.	Oct., '79	7294	29	8	20	60	Louisville.....	Ky.	Sept., '71	4871	84	10	15	48
Atlanta.....	Ga.	Sept., '78	6160	55	11	16	42	Lynchburg.....	Va.	May, '71	2120	131	10	16	46
Atlantic City.....	N. J.	Dec., '73	7195	32	10	12	44	Mackinac City.....	Mich.	Aug., '82	7388	25	9	13	46
Augusta.....	Ga.	Nov., '70	2592	130	10	19	45	Macon, Fort.....	N. C.	May, '78	9534	11	15	12	37
Baltimore.....	Md.	Jan., '71	39 3	103	10	12	45	Marquette.....	Mich.	July, '82	8326	16	4	23	59
Barnegat City.....	N. J.	Dec., '73	9014	14	13	11	42	Memphis.....	Tenn.	May, '71	6546	49	11	13	49
Bennet, Fort.....	Dak.	Dec., '79	5749	66	2	25	61	Mobile.....	Wis.	Feb., '71	3702	111	11	16	46
Benton, Fort.....	Mont.	Dec., '79	5354	76	3	21	65	Montgomery.....	Ala.	Nov., '70	8095	18	8	13	49
Bismarck.....	Dak.	Sept., '74	6729	43	3	19	62	Moorhead.....	Minn.	Nov., '70	4305	96	14	16	41
Black I-land.....	R. I.	Sept., '80	112 2	4	13	9	36	Mount Washington.....	N. H.	Jan., '81	3494	116	9	18	44
Boise City.....	Idaho	July, '77	2900	127	3	22	53	Nashville.....	Tenn.	Dec., '70	7835	20	22	12	47
Boston.....	Mass.	Nov., '70	6572	48	13	15	48	New Haven.....	Conn.	Nov., '70	2869	128	11	17	48
Brownsville.....	Texas	Aug., '75	3983	101	11	17	39	New London.....	Conn.	Dec., '72	5458	73	12	15	46
Buffalo.....	N. Y.	Nov., '70	6733	41	11	14	45	New Orleans.....	La.	Jan., '71	5168	78	12	14	42
Buford, Fort.....	Dak.	Oct., '78	6243	56	2	22	61			Nov., '70	5462	72	13	14	33
Caro.....	Ill.	June, '71	4924	82	10	14	47								

Cape Henry.....	Va.	Dec., '73	9541	10	14	11	41	New York	N. Y.	Nov., '70	6731	42	13	42
Cape May.....	N. J.	May, '71	9956	9	5	11	36	Norfolk	Va.	Jan., '71	5212	12	12	40
Cape Mendocino.....	Cal.	July, '82	10389	7	7	12	33	North Platte	Neb.	Sept., '74	8083	19	3	65
Cedar Keys.....	Fla.	Nov., '79	6139	58	13	13	33	Olympia	Wash.	July, '77	77	129	17	37
Charleston.....	S. C.	Jan., '71	5574	68	15	14	37	Omaha	Neb.	Nov., '70	6316	54	8	35
Charlotte.....	N. C.	Jan., '79	3658	112	11	17	46	Oswego	N. Y.	Nov., '70	6	53	9	14
Chattanooga.....	Tenn.	Oct., '78	3648	113	11	16	46	Palestine	Texas	Dec., '81	6593	47	17	45
Cheyenne.....	Wyo.	Nov., '70	7190	33	2	28	63	Pensacola	Fla.	Oct., '79	5467	71	16	79
Chicago.....	Ill.	Nov., '70	6026	61	10	12	48	Philadelphia	Pa.	Jan., '71	6600	46	10	43
Chicot.....	Va.	Mar., '80	9313	12	10	12	41	Pike's Peak	Col.	Nov., '73	14562	1	6	44
Cincinnati.....	Ohio	Nov., '70	3905	102	9	14	46	Pioche	Nev.	July, '77	4840	85	1	24
Cleveland.....	Ohio	Nov., '70	7233	51	10	15	48	Pittsburg	Pa.	Nov., '70	4128	98	8	17
Columbus.....	Ohio	July, '78	4915	83	10	16	50	Portland	Mich.	July, '74	6893	39	8	15
Concho, Fort.....	Texas	Oct., '75	5792	65	8	24	54	Port Huron	Mich.	Jan., '71	5396	75	11	49
Custer, Fort.....	Mont.	Dec., '78	4977	80	2	24	64	Portland	Ore.	Nov., '71	3101	125	14	16
Davenport.....	Iowa	May, '71	5939	63	8	16	50	Prescott	Ariz.	Nov., '73	3809	106	2	31
Davis, Fort.....	Texas	Dec., '77	3486	117	4	25	51	Provincetown	Mass.	Feb., '82	7086	36	14	10
Dayton.....	W. T.	July, '79	3814	105	6	20	53	Red Bluff	Cal.	July, '77	4506	90	4	22
Deadwood.....	Dak.	Nov., '78	2957	126	3	19	59	Rio Grande City	Texas	May, '75	4815	86	6	19
Delaware Breakwater.....	Del.	Jan., '80	11801	2	8	11	38	Rochester	N. Y.	Nov., '70	6627	45	9	16
Denver.....	Colo.	Nov., '71	4415	91	10	18	54	Roseburg	Ore.	July, '77	2831	104	8	19
Des Moines.....	Iowa	Aug., '78	4415	91	10	18	54	Sacramento	Cal.	July, '77	3758	108	3	21
Detroit.....	Mich.	Nov., '70	5560	69	8	15	48	Saint Louis	Mo.	Nov., '70	6914	38	8	17
Dodge City.....	Kan.	Sept., '74	8349	15	3	28	62	Saint Paul	Minn.	Nov., '70	6148	77	7	17
Dubuque.....	Iowa	July, '73	3727	110	10	19	52	Saint Vincent	Minn.	Sept., '80	6630	44	5	19
Duluth.....	Minn.	Nov., '70	5513	70	9	11	49	Salt Lake City	Utah	Mar., '74	3481	118	4	19
Eagle Rock.....	Idaho	Dec., '80	7317	28	3	25	61	San Diego	Cal.	Nov., '71	3987	100	1	16
Eastport.....	Me.	Apr., '73	7049	37	13	11	35	Sandusky	Ohio	Aug., '77	10617	8	11	12
Elliot, Fort.....	Texas	Nov., '79	7693	24	6	27	62	Sandy Hook	N. J.	Dec., '73	10857	5	13	10
El Paso.....	Texas	Nov., '77	3153	124	3	30	53	San Francisco	Cal.	Jan., '71	5795	64	4	10
Erie.....	Pa.	May, '73	7662	22	13	13	44	Santa Fe	N. Mex.	Mar., '71	4632	89	3	23
Escanaba.....	Mich.	May, '81	7132	35	10	14	43	Savannah	Ga.	Apr., '80	4357	95	12	15
Fort Smith.....	Ark.	June, '82	3345	121	14	22	55	Shaw, Fort	Mont.	Sept., '71	6867	40	3	21
Galveston.....	Texas	Apr., '71	7166	34	17	9	33	Shreveport	La.	June, '75	3212	123	13	18
Grand Haven.....	Mich.	May, '71	8260	17	11	12	42	Sill, Fort	Ind. T.	Oct., '75	7325	26	7	22
Grant, Fort.....	Ariz.	Nov., '75	5041	79	3	23	46	Smithville	N. C.	Feb., '81	6350	52	16	13
Hatteras.....	N. C.	Dec., '80	10717	6	21	10	35	Spokane Falls	Wash. T.	July, '79	4408	92	6	18
Helena.....	Mont.	Oct., '79	3746	109	4	17	53	Springfield	Ill.	Feb., '76	7394	30	11	16
Huron.....	Dak.	July, '81	7631	23	5	23	60	Stockton, Fort	Texas	Nov., '71	7725	21	7	26
Indianapolis.....	Ind.	Feb., '71	3772	107	10	16	50	Thomas, Camp	Ariz.	Sept., '77	6076	59	1	32
Indianola.....	Texas	May, '72	9014	13	13	13	37	Toledo	Ohio	Nov., '70	6076	59	8	15
Jacksonville.....	Fla.	Sept., '71	4808	87	15	14	37	Vicksburg	Miss.	Sept., '71	3620	114	14	17
Keokuk.....	Iowa	July, '71	5733	67	9	17	52	Visalia	Cal.	July, '77	1801	132	1	29
Key West.....	Fla.	Nov., '70	7518	27	15	8	23	Washington	D. C.	Nov., '70	4112	99	10	16
Kitty Hawk.....	N. C.	Jan., '75	11260	3	17	10	39	West Las Animas	Col.	Oct., '81	6021	62	1	33
Knoxville.....	Tenn.	Jan., '71	3462	120	10	19	49	Wilmington	N. C.	Jan., '71	4639	88	14	43
La Crosse.....	Wis.	Oct., '72	5421	74	10	13	52	Winnebago	Nev.	July, '77	6044	60	1	28
La Messilla.....	N. Mex.	Nov., '77	1198	134	2	32	59	Yankton	Dak.	Apr., '73	6295	51	5	63
Leavenworth.....	Kan.	May, '71	4945	81	9	19	55	Yuma	Ariz.	Nov., '73	3394	122	3	26



# THE CHART ILLUSTRATING SEASONAL ISOTHERMS AND WIND INDICATIONS FOR AUTUMN.

Representing a period covering nearly 11 years for temperature lines,  
and 2 years for wind arrows.



— ISOTHERMS.—The average seasonal temperatures since the Signal Service Stations were established (Fahrenheit).

↔ PREVALENT direction by seasons (since establishment).

↔ RAIN-BEARING WINDS.—Directions (quadrant) indicated by arrow's feather) which are MOST LIKELY to be followed by rain or snow.

↔ PLEASANT WEATHER WINDS.—Directions which are LEAST LIKELY to be followed by rain or snow.

WINDS (blow-  
ing as the ar-  
rows fly).





## THE SEASONAL CHARTS.

## TEMPERATURE, WIND MOVEMENT AND RAINFALL STATISTICS FOR WINTER.

TABLE GIVING NAMES OF STATIONS, MILES THE WIND TRAVELS, COMPARATIVE WINDINESS, INCHES OF RAIN OR MELTED SNOW, DAILY RANGES OF TEMPERATURE, AND MONTHLY RANGES OF TEMPERATURE.

STATIONS.		WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	MONTHLY WIND MOVEMENT IN MILES FROM COMMENCEMENT OF OBSERVATIONS TO JANUARY, 1884.	COMPARATIVE WINDINESS OF STATIONS, 1 TO 134.	MEAN RAIN AND MELTED SNOW, IN INCHES, FROM COMMENCEMENT OF OBSERVATIONS TO JANUARY, 1884.	MEAN DAILY RANGE OF TEMPERA- TURE, 1883.	MEANS OF MONTHLY RANGES OF TEMPERATURE, FROM COMMENCEMENT OF OBSERVATIONS TO JANUARY, 1884.	STATIONS.	WHEN SIGNAL STATIONS WERE ESTAB- LISHED.	MONTHLY WIND MOVEMENT IN MILES FROM COMMENCEMENT OF OBSERVATIONS TO JANUARY, 1884.	COMPARATIVE WINDINESS OF STATIONS, 1 TO 134.	MEAN RAIN AND MELTED SNOW, IN INCHES, FROM COMMENCEMENT OF OBSERVATIONS TO JANUARY, 1884.	MEAN DAILY RANGE OF TEMPERA- TURE, 1883.	MEANS OF MONTHLY RANGES OF TEMPERATURE, FROM COMMENCEMENT OF OBSERVATIONS TO JANUARY, 1884.
Albany	N. Y.	Dec., '73	5709	71	8	14	54	Leviston	July, '79	2993	129	8	12	44
Alpena	Mich.	Sept., '72	6925	48	6	14	53	Little Rock	July, '79	4258	107	16	14	48
Apache, Fort	Ariz.	Oct., '77	3770	117	4	31	63	Los Angeles	July, '77	3912	113	9	22	42
Assinaboune, Fort	Mont.	Oct., '79	8114	25	8	21	75	Louisville	Sept., '71	5683	74	13	14	55
Atlanta	Ga.	Dec., '73	7513	36	20	16	48	Lynchburg	May, '71	2830	127	10	15	51
Atlantic City	N. J.	Dec., '73	7255	41	11	15	49	Mackinaw City	Aug., '82	8846	17	12	14	49
Augusta	Ga.	Nov., '70	2664	130	13	19	48	Macon, Fort	May, '78	8622	22	15	14	41
Baltimore	Md.	Jan., '71	4161	109	9	13	51	Maginnis Fort	July, '83	10308	9	3	15	49
Barneget City	N. J.	Dec., '73	9634	12	13	13	47	Marquette	May, '71	6751	50	4	14	53
Bennet, Fort	Dak.	Dec., '79	4592	98	2	28	71	Memphis	Feb., '71	4354	109	15	14	51
Benton, Fort	Mont.	Dec., '79	5834	66	2	23	86	Milwaukee	Nov., '70	8688	20	6	15	56
Bismarck	Dak.	Sept., '74	5993	62	2	25	69	Mobile	Nov., '70	4426	103	14	16	44
Block Island	R. I.	Sept., '80	12259	3	16	12	45	Montgomery	Nov., '70	4040	111	16	80	50
Boise City	Idaho	July, '77	3076	126	6	18	47	Moorhead	Jan., '81	8123	24	3	21	65
Boston	Mass.	Nov., '70	7254	42	11	18	56	Mount Washington	Dec., '70	3325	123	14	20	62
Brownsville	Texas	Aug., '75	5308	79	6	17	46	Nashville	Nov., '70	5753	68	12	15	54
Buffalo	N. Y.	Nov., '70	8102	26	8	12	48	New Haven	Dec., '72	5708	72	11	18	51
Buford, Fort	Dak.	Oct., '78	4664	95	3	23	75	New London	Jan., '71	5708	72	11	15	48
Cairo	Ill.	June, '71	5718	70	12	13	54	New Orleans	Nov., '70	5868	64	15	14	41
Cape Henry	Va.	Dec., '73	9491	13	13	13	50	New York	Nov., '70	7312	40	10	13	48

Cape May	N. J.	May, '71	11119	5	12	13	41	Norfolk	Val.	Jan., '71	5701	73	12	15	50
Cape Mendocino	Cal.	July, '82	10365	8	8	12	31	North Platte	Neb.	Sept., '74	6988	47	2	26	69
Cedar Keys	Fla.	Nov., '79	6493	53	12	12	38	Olympia	Wash.	July, '77	3310	124	31	10	32
Charleston	S. C.	Jan., '71	5339	76	11	15	43	Omaha	Neb.	Nov., '70	6586	52	2	18	61
Charlotte	N. C.	Jan., '79	4896	91	16	15	50	Oswego	N. Y.	Nov., '70	7705	30	9	13	51
Chattanooga	Tenn.	Oct., '78	3973	112	20	14	48	Palestine	Texas	Dec., '81	6922	49	9	16	47
Cheyenne	Wyo.	Nov., '70	8715	19	1	22	65	Pensacola	Fla.	Oct., '79	5362	77	15	14	41
Chicago	Ill.	Nov., '70	6431	55	6	14	55	Philadelphia	Pa.	Jan., '71	7532	84	9	13	50
Chincoteague	Va.	Mar., '80	8874	15	12	14	44	Pike's Peak	Col.	Nov., '73	17390	1	4	12	46
Cincinnati	Ohio	Nov., '70	4636	96	11	13	54	Pioche	Nev.	July, '77	4782	93	2	20	49
Cleveland	Ohio	Nov., '70	7692	31	8	14	55	Pittsburg	Pa.	Nov., '70	4925	88	8	14	57
Columbus	Ohio	July, '78	6082	60	11	13	54	Port Huron	Mich.	July, '74	7522	35	7	14	50
Concho, Fort	Texas	Oct., '75	6140	58	4	23	61	Portland	Me.	Jan., '71	5723	69	9	15	49
Custer, Fort	Mont.	Dec., '78	4933	87	2	22	80	Prescott	Ore.	Nov., '71	3809	115	24	10	34
Davenport	Iowa	May, '71	6136	59	5	18	57	Prescott	Ariz.	Nov., '73	3341	122	3	31	61
Davis, Fort	Texas	Dec., '77	4124	110	1	24	63	Provincetown	Mass.	Feb., '82	8523	23	13	12	37
Dayton	W. T.	July, '79	3669	119	13	16	53	Red Bluff	Cal.	July, '77	5049	83	17	17	37
Deadwood	Dak.	Nov., '78	2636	131	9	22	68	Rio Grande City	Texas	May, '75	4958	85	4	19	55
Delaware Breakwater	Del.	Jan., '80	12236	2	2	22	68	Rochester	N. Y.	Nov., '70	7994	27	9	13	54
Denver	Col.	Nov., '71	4394	104	2	22	68	Roseburg	Ore.	July, '77	2906	132	18	11	37
Des Moines	Iowa	Aug., '78	4895	26	4	17	61	Sacramento	Cal.	July, '77	4465	101	11	16	33
Detroit	Mich.	Nov., '70	5059	91	7	12	51	Saint Louis	Mo.	Nov., '70	7399	39	8	15	59
Dodge City	Kan.	Sept., '74	7716	29	1	26	66	Saint Paul	Minn.	Nov., '70	5666	43	3	18	59
Dubuque	Iowa	July, '73	2624	120	5	18	59	Saint Vincent	Minn.	Sept., '80	7184	28	2	20	69
Duluth	Minn.	Nov., '70	5987	82	3	17	40	Salt Lake City	Utah	Mar., '74	2798	114	4	15	41
Eagle Rock	Idaho	Dec., '80	6641	51	8	20	61	San Diego	Cal.	Nov., '71	3881	111	6	17	31
Eastport	Me.	Apr., '73	8573	16	10	15	53	Sanitusk	Ohio	Aug., '77	9857	75	8	12	50
Elliot, Fort	Texas	Nov., '79	7509	37	1	26	72	Sandy Hook	N. J.	Dec., '73	11058	7	11	12	46
El Paso	Texas	Nov., '77	3761	118	2	26	53	San Francisco	Cal.	Mar., '71	5024	84	14	9	22
Erie	Pa.	May, '73	8777	18	10	13	51	Santa Fé	N. Mex.	Jan., '71	4870	89	2	22	52
Escanaba	Mich.	May, '81	7035	45	4	13	49	Savannah	Ga.	Apr., '80	4675	94	10	17	45
Fort Smith	Ark.	June, '82	4296	105	10	20	65	Shaw, Fort	Mont.	Sept., '71	8875	14	2	20	76
Galveston	Texas	Apr., '71	5533	32	12	11	37	Shreveport	La.	June, '75	3892	116	15	50	50
Grand Haven	Mich.	May, '71	8626	21	7	11	46	Sill, Fort	Ind. T.	Oct., '75	7505	38	5	21	58
Grant, Fort	Ariz.	Nov., '75	4946	86	3	21	49	Smithville	N. C.	Feb., '81	6395	56	11	14	44
Hattens	N. C.	Dec., '80	11086	6	18	12	41	Spokane Falls	Wash. T.	July, '79	3211	122	9	14	54
Helena	Mont.	Oct., '79	3501	121	4	15	66	Springfield	Ill.	Feb., '76	7014	46	11	15	55
Huron	Dak.	July, '81	7541	53	1	24	67	Stockton, Fort	Texas	Nov., '71	5834	67	1	28	64
Indianapolis	Ind.	Feb., '71	4602	97	10	14	57	Thomas, Camp	Ariz.	Sept., '77			2	28	51
Indianola	Texas	May, '72	10200	10	8	13	44	Toledo	Ohio	Nov., '70	7082	44	7	13	52
Jack-onville	Fla.	Sept., '71	4305	100	10	16	45	Vicksburg	Miss.	Sept., '71	4509	99	15	50	50
Keokuk	Iowa	July, '71	5867	65	6	15	60	Visalia	Cal.	July, '77	1926	133	5	18	40
Key West	Fla.	Nov., '70	7797	28	6	9	26	Washington	D. C.	Nov., '70	4813	90	9	15	55
Kitty Hawk	N. C.	Jan., '75	11176	4	15	14	47	West Las Animas	Col.	Oct., '81	5993	63	1	36	59
Knoxville	Tenn.	Jan., '71	4440	102	15	17	55	Wilmington	N. C.	Jan., '71	5318	78	11	17	49
La Crosse	Wis.	Oct., '72	5138	81	4	16	63	Winemucca	Nev.	July, '77	6485	54	3	22	57
La Messilla	N. Mex.	Nov., '77	1612	134	2	35	60	Yankton	Dak.	Apr., '73	6331	57	2	22	68
Leavenworth	Kan.	May, '71	5194	80	5	17	61	Yuma	Ariz.	Nov., '73	4168	108	1	21	43



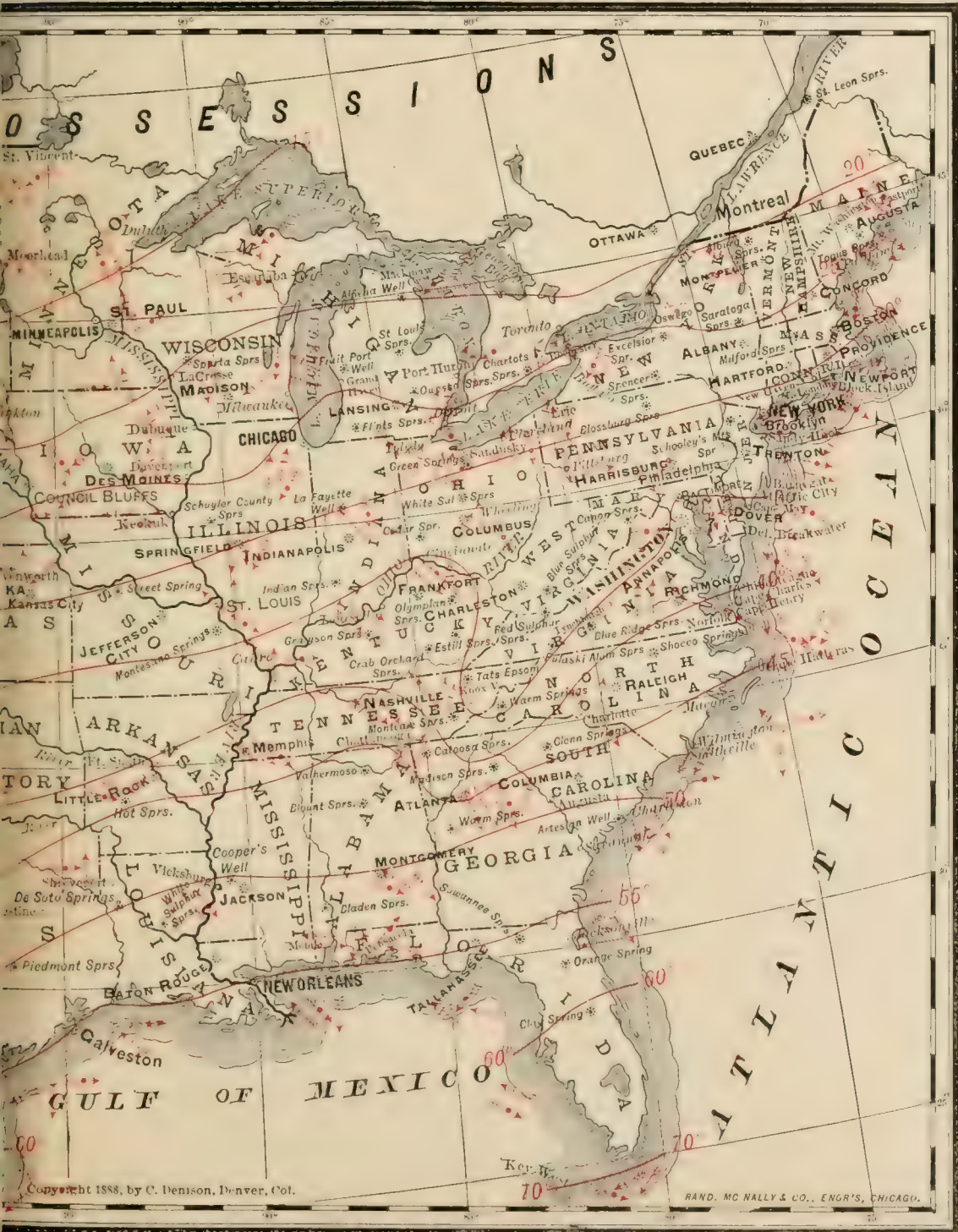
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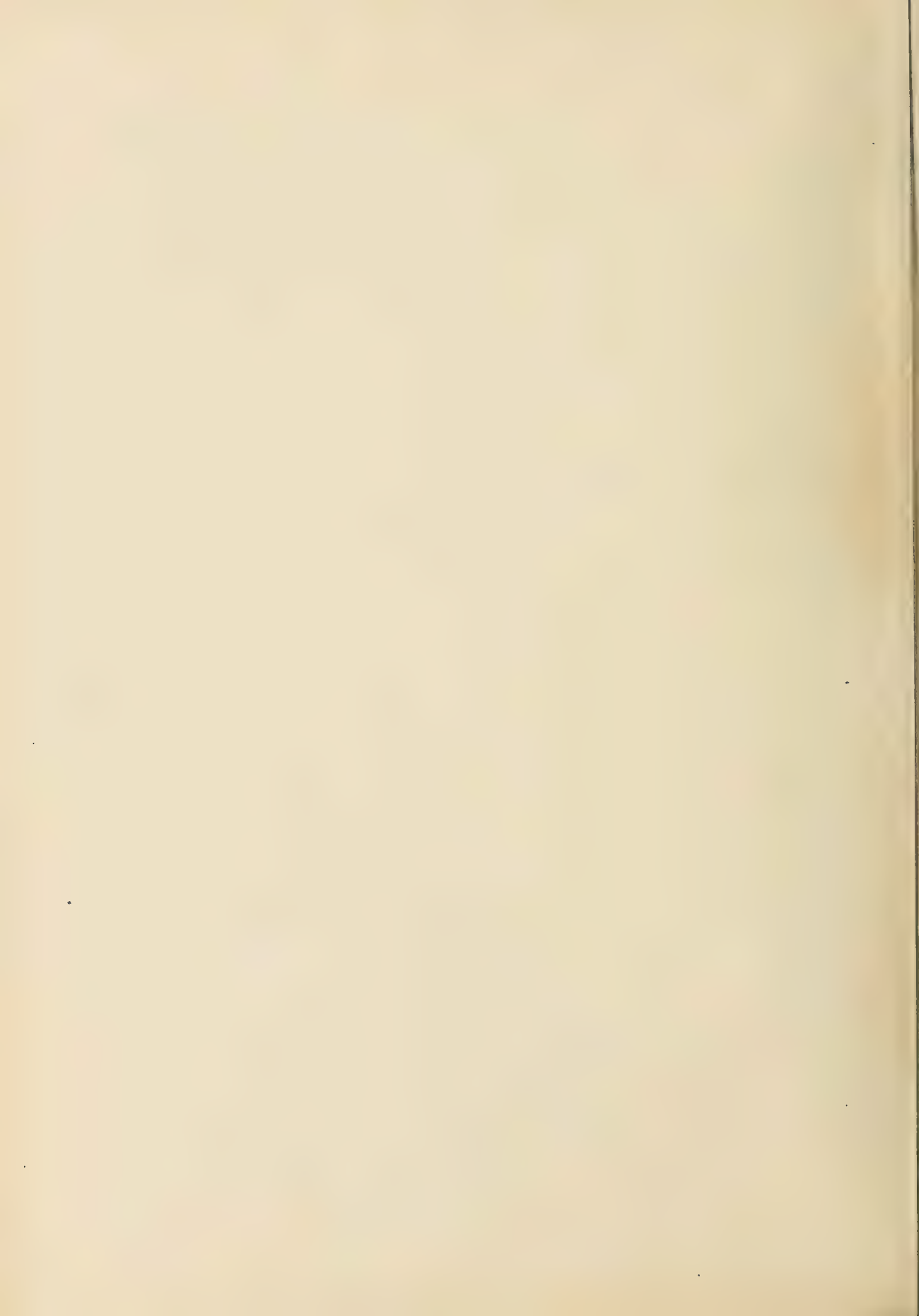


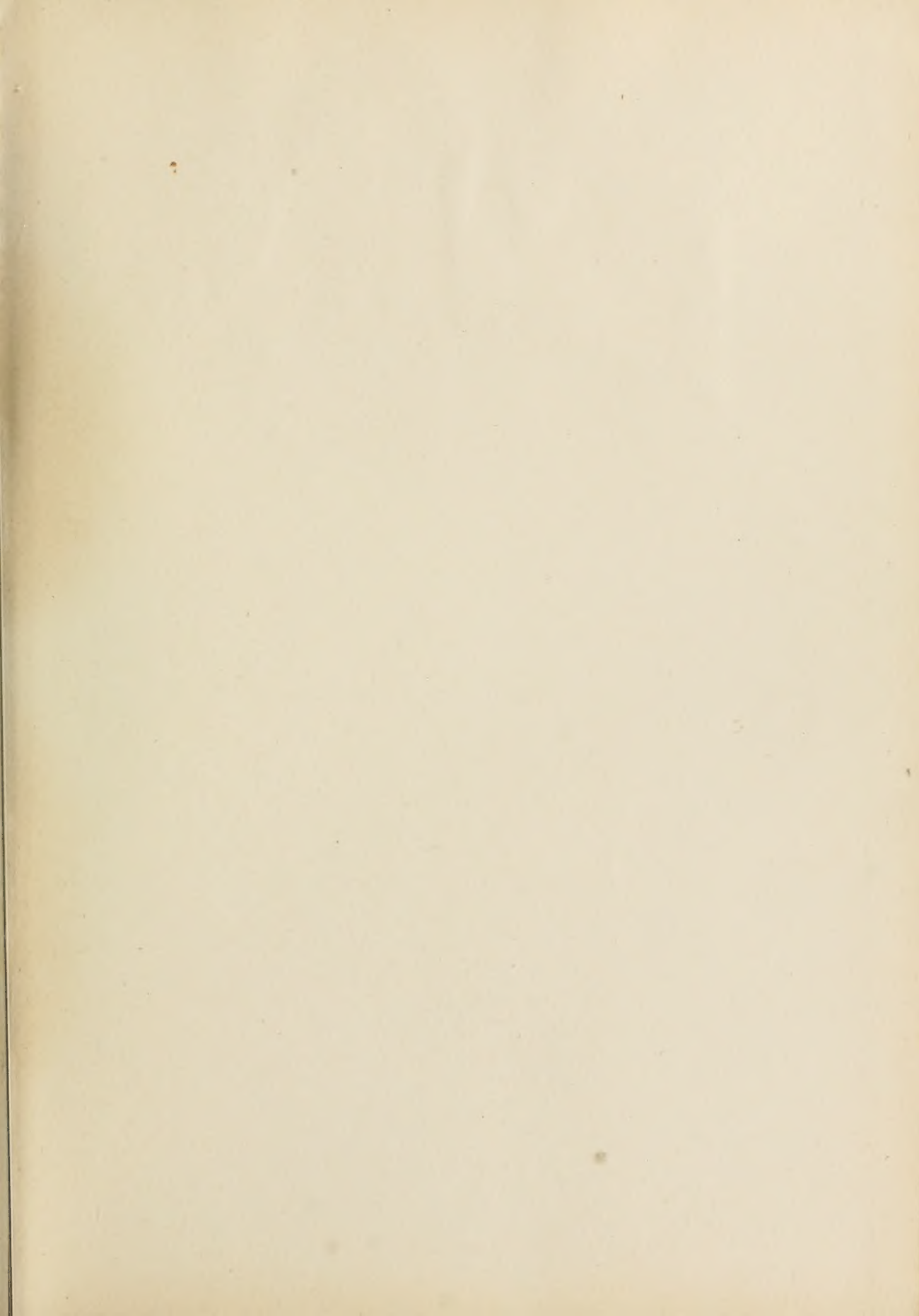
- ISOTHERMS.—The average seasonal temperatures since the Signal Service Stations were established (Fahrenheit).
- PREVAILING direction by seasons (since establishment).
- RAIN-BEARING WINDS.—Directions (quadrants indicated by arrow's feather) which are MOST LIKELY to be followed by rain or snow.
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WINDS (blowing as the arrows fly).











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